

HEAT SOURCE UNITS

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1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P72ZLMU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz			
Cooling capacity (Nominal)	*1	BTU/h	72,000			
		kW	21.1			
	(575)	Power input	kW	3.23		
		Current input	A	3.6		
	(Rated)	(575)	BTU/h	69,000		
			kW	20.2		
		Power input	kW	2.96	3.12	
		Current input	A	3.3	3.4	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	80,000			
		kW	23.4			
	(575)	Power input	kW	3.63		
		Current input	A	4.0		
	(Rated)	(575)	BTU/h	76,000		
			kW	22.3		
		Power input	kW	3.34	3.36	
		Current input	A	3.7	3.7	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity				
	Model/Quantity	P06~P96/1~15				
Sound pressure level (measured in anechoic room)	dB <A>	46.0				
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 (9.52) Brazed			
	Gas pipe	in. (mm)	3/4 (19.05) Brazed			
Minimum Circuit Ampacity	A	5				
Maximum Overcurrent Protection	A	15				
Circulating water	Water flow rate	G/h	1,522			
		G/min (gpm)	25.4			
		m ³ /h	5.76			
		L/min	96			
		cfm	3.4			
	Pressure drop	psi	3.48			
		kPa	24			
Operating volume range	G/h	793 ~ 1,902				
	G/min (gpm)	13.2 ~ 31.7				
	m ³ /h	3.0 ~ 7.2				
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1				
	Manufacture	AC&R Works, MITSUBISHI ELECTRIC CORPORATION				
	Starting method	Inverter				
	Motor output	kW	4.3			
	Case heater	kW	-			
	Lubricant	MEL32				
External finish	Galvanized steel sheets					
External dimension H x W x D	in.	43-5/16 x 34-11/16 x 21-11/16				
	mm	1,100 x 880 x 550				
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)				
	Inverter circuit	Over-heat protection, Over-current protection				
	Compressor	Over-heat protection				
Refrigerant	Type x original charge	R410A x 11 lbs + 1 oz (5.0 kg)				
	Control	LEV and HIC circuit				
Net weight	lbs (kg)	413 (187)				
Heat exchanger	Water volume in plate	G	plate type			
		l	1.32			
		psi	5.0			
	Water pressure Max.	psi	290			
		MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)	Copper pipe, tube-in-tube structure					
Drawing	External	KS94G404				
	Wiring	KE94G219				
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts	joint: CMY-Y102SS-G2, CMY-Y102LS-G2 Header: CMY-Y104, 108, 1010C-G					
Remarks	<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F (40°C D.B.).</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>					

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

MY 575V

Heat Source Model			PQHY-P96ZLMU-A			
Indoor Model			Non-Ducted	Ducted		
Power source			3-phase 3-wire 575 V ±10% 60 Hz			
Cooling capacity (Nominal)	*1	BTU/h	96,000			
		kW	28.1			
	(575)	Power input	kW	4.65		
		Current input	A	5.1		
	(Rated)		BTU/h	92,000		
			kW	27.0		
	(575)		Power input	kW	4.26	5.19
			Current input	A	4.7	5.7
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	108,000			
		kW	31.7			
	(575)	Power input	kW	5.05		
		Current input	A	5.6		
	(Rated)		BTU/h	103,000		
			kW	30.2		
	(575)		Power input	kW	4.65	4.48
			Current input	A	5.1	4.9
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity				
	Model/Quantity	P06-P96/1~20				
Sound pressure level (measured in anechoic room)	dB <A>	48.0				
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 (9.52) Brazed (1/2 (12.7) Brazed, total length >= 90 m)			
	Gas pipe	in. (mm)	7/8 (22.2) Brazed			
Minimum Circuit Ampacity	A	7				
Maximum Overcurrent Protection	A	15				
Circulating water	Water flow rate	G/h	1,522			
		G/min (gpm)	25.4			
		m ³ /h	5.76			
		L/min	96			
		cfm	3.4			
	Pressure drop	psi	3.48			
		kPa	24			
	Operating volume range	G/h	793 ~ 1,902			
G/min (gpm)		13.2 ~ 31.7				
m ³ /h		3.0 ~ 7.2				
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1				
	Manufacture	AC&R Works, MITSUBISHI ELECTRIC CORPORATION				
	Starting method	Inverter				
	Motor output	kW	6.0			
	Case heater	kW	-			
	Lubricant	MEL32				
	External finish	Galvanized steel sheets				
External dimension H x W x D	in.	43-5/16 x 34-11/16 x 21-11/16				
	mm	1,100 x 880 x 550				
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)				
	Inverter circuit	Over-heat protection, Over-current protection				
	Compressor	Over-heat protection				
Refrigerant	Type x original charge	R410A x 11 lbs + 1 oz (5.0 kg)				
	Control	LEV and HIC circuit				
Net weight	lbs (kg)	413 (187)				
Heat exchanger	Water volume in plate	G	1.32			
		l	5.0			
		Water pressure Max.	psi	290		
		MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)	Copper pipe, tube-in-tube structure					
Drawing	External	KS94G404				
	Wiring	KE94G219				
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts	joint: CMY-Y102SS-G2, CMY-Y102LS-G2 Header: CMY-Y104, 108, 1010C-G					
Remarks	<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>					

Notes: 1.Nominal cooling conditions (Test conditions are based on AHR1 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHR1 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	Unit converter
	BTU/h =kW x 3.412
	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P120ZLMU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz			
Cooling capacity (Nominal)	*1	BTU/h	120,000			
		kW	35.2			
	(575)	Power input	kW	7.24		
		Current input	A	8.0		
	(Rated)	(575)	BTU/h	114,000		
			kW	33.4		
		Power input	kW	6.66	7.35	
		Current input	A	7.4	8.2	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	135,000			
		kW	39.6			
	(575)	Power input	kW	6.83		
		Current input	A	7.6		
	(Rated)	(575)	BTU/h	129,000		
			kW	37.8		
		Power input	kW	6.29	5.92	
		Current input	A	7.0	6.6	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity				
	Model/Quantity	P06~P96/1~26				
Sound pressure level (measured in anechoic room)		dB <A>	54.0			
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/8 (9.52) Brazed (1/2 (12.7) Brazed, total length >= 40 m)			
	Gas pipe	in. (mm)	7/8 (22.2) Brazed			
Minimum Circuit Ampacity		A	11			
Maximum Overcurrent Protection		A	15			
Circulating water	Water flow rate	G/h	1,522			
		G/min (gpm)	25.4			
		m ³ /h	5.76			
		L/min	96			
		cfm	3.4			
	Pressure drop	psi	3.48			
		kPa	24			
Operating volume range	G/h	793 ~ 1,902				
	G/min (gpm)	13.2 ~ 31.7				
	m ³ /h	3.0 ~ 7.2				
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1			
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION			
	Starting method		Inverter			
	Motor output	kW	7.7			
	Case heater	kW	-			
	Lubricant		MEL32			
External finish			Galvanized steel sheets			
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16			
		mm	1,100 x 880 x 550			
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)			
	Inverter circuit		Over-heat protection, Over-current protection			
	Compressor		Over-heat protection			
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)			
	Control		LEV and HIC circuit			
Net weight		lbs (kg)	413 (187)			
Heat exchanger			plate type			
			Water volume in plate	G	1.32	
				l	5.0	
			Water pressure Max.	psi	290	
MPa	2.0					
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe, tube-in-tube structure			
Drawing	External		KS94G404			
	Wiring		KE94G219			
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts			joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2 Header: CMY-Y104, 108, 1010C-G			
Remarks			<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F FD.B. (40°C D.B.).</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>			

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

MY 575V

Heat Source Model			PQHY-P144ZLMU-A		
Indoor Model			Non-Ducted	Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz		
Cooling capacity (Nominal)	*1	BTU/h	144,000		
		kW	42.2		
	(575)	Power input	kW	8.78	
		Current input	A	9.7	
	(Rated)	BTU/h	137,000		
		kW	40.2		
	(575)	Power input	kW	8.07	9.98
		Current input	A	9.0	11.1
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	160,000		
		kW	46.9		
	(575)	Power input	kW	8.11	
		Current input	A	9.0	
	(Rated)	BTU/h	152,000		
		kW	44.5		
	(575)	Power input	kW	7.47	7.90
		Current input	A	8.3	8.8
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity			
	Model/Quantity	P06-P06/1~31			
Sound pressure level (measured in anechoic room)	dB <A>	54.0			
Refrigerant piping diameter	Liquid pipe	in. (mm)	1/2 (12.7) Brazed		
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity	A	13			
Maximum Overcurrent Protection	A	20			
Circulating water	Water flow rate	G/h	1,902		
		G/min (gpm)	31.7		
		m ³ /h	7.20		
		L/min	120		
		cfm	4.2		
	Pressure drop	psi	6.38		
		kPa	44		
	Operating volume range	G/h	1,189 ~ 3,054		
G/min (gpm)		19.8 ~ 50.9			
m ³ /h		4.5 ~ 11.6			
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1			
	Manufacture	AC&R Works, MITSUBISHI ELECTRIC CORPORATION			
	Starting method	Inverter			
	Motor output	kW	9.5		
	Case heater	kW	-		
	Lubricant	MEL32			
	External finish	Galvanized steel sheets			
External dimension H x W x D	in.	57-1/8 x 34-11/16 x 21-11/16			
	mm	1,450 x 880 x 550			
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)			
	Inverter circuit	Over-heat protection, Over-current protection			
	Compressor	Over-heat protection			
Refrigerant	Type x original charge	R410A x 13 lbs + 4 oz (6.0 kg)			
	Control	LEV and HIC circuit			
Net weight	lbs (kg)	512 (232)			
Heat exchanger	Water volume in plate	G	1.32		
		l	5.0		
		Water pressure Max.	psi	290	
	MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)	Copper pipe, tube-in-tube structure				
Drawing	External	KS94G405			
	Wiring	KE94G219			
Standard attachment	Document	Installation Manual			
	Accessory	Details refer to External Drw			
Optional parts	joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2 Header: CMY-Y104, 108, 1010C-G				
Remarks	<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>				

Notes: 1.Nominal cooling conditions (Test conditions are based on AHR1 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHR1 1230) Indoor: 68°F D.B. (20°C D.B.), Water temperature: 68°F (20°C)	Unit converter
	BTU/h =kW x 3.412
	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P168ZLMU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz			
Cooling capacity (Nominal)	*1	BTU/h	168,000			
		kW	49.2			
	(575)	Power input	kW	12.05		
		Current input	A	13.4		
	(Rated)	*1	BTU/h	161,000		
			kW	47.2		
(575)	Power input	kW	11.10	11.88		
	Current input	A	12.3	13.2		
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	188,000			
		kW	55.1			
	(575)	Power input	kW	9.86		
		Current input	A	11.0		
	(Rated)	*2	BTU/h	179,000		
			kW	52.5		
(575)	Power input	kW	9.09	9.72		
	Current input	A	10.1	10.8		
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity				
	Model/Quantity	P06~P96/1~36				
Sound pressure level (measured in anechoic room)	dB <A>	56.0				
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 (15.88) Brazed			
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed			
Minimum Circuit Ampacity	A	16				
Maximum Overcurrent Protection	A	25				
Circulating water	Water flow rate	G/h	1,902			
		G/min (gpm)	31.7			
		m ³ /h	7.20			
		L/min	120			
		cfm	4.2			
	Pressure drop	psi	6.38			
		kPa	44			
Operating volume range	G/h	1,189 ~ 3,054				
	G/min (gpm)	19.8 ~ 50.9				
	m ³ /h	4.5 ~ 11.6				
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1				
	Manufacture	AC&R Works, MITSUBISHI ELECTRIC CORPORATION				
	Starting method	Inverter				
	Motor output	kW	11.0			
	Case heater	kW	-			
	Lubricant	MEL32				
External finish	Galvanized steel sheets					
External dimension H x W x D	in.	57-1/8 x 34-11/16 x 21-11/16				
	mm	1,450 x 880 x 550				
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)				
	Inverter circuit	Over-heat protection, Over-current protection				
	Compressor	Over-heat protection				
Refrigerant	Type x original charge	R410A x 13 lbs + 4 oz (6.0 kg)				
	Control	LEV and HIC circuit				
Net weight	lbs (kg)	512 (232)				
Heat exchanger	Water volume in plate	G	1.32			
		l	5.0			
	Water pressure Max.	psi	290			
		MPa	2.0			
HIC circuit (HIC: Heat Inter-Changer)	Copper pipe, tube-in-tube structure					
Drawing	External	KS94G405				
	Wiring	KE94G219				
Standard attachment	Document	Installation Manual				
	Accessory	Details refer to External Drw				
Optional parts	joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2 Header: CMY-Y104, 108, 1010C-G					
Remarks	<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>					

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3,412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F D.B. (20°C D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

MV 575V

Heat Source Model			PQHY-P192ZLMU-A		
Indoor Model			Non-Ducted	Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz		
Cooling capacity (Nominal)	*1	BTU/h	192,000		
		kW	56.3		
	(575)	Power input	kW	15.05	
		Current input	A	16.7	
	(Rated)		BTU/h	183,000	
			kW	53.6	
(575)	Power input	kW	13.87	14.19	
	Current input	A	15.4	15.8	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	215,000		
		kW	63.0		
	(575)	Power input	kW	11.90	
		Current input	A	13.2	
	(Rated)		BTU/h	205,000	
			kW	60.1	
(575)	Power input	kW	10.97	11.56	
	Current input	A	12.2	12.8	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity			
	Model/Quantity	P06-P06/1~41			
Sound pressure level (measured in anechoic room)	dB <A>	58.0			
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 (15.88) Brazed		
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed		
Minimum Circuit Ampacity	A	20			
Maximum Overcurrent Protection	A	30			
Circulating water	Water flow rate	G/h	1,902		
		G/min (gpm)	31.7		
		m ³ /h	7.20		
		L/min	120		
		cfm	4.2		
	Pressure drop	psi	6.38		
		kPa	44		
Operating volume range	G/h	1,189 ~ 3,054			
	G/min (gpm)	19.8 ~ 50.9			
	m ³ /h	4.5 ~ 11.6			
Compressor	Type x Quantity	Inverter scroll hermetic compressor x 1			
	Manufacture	AC&R Works, MITSUBISHI ELECTRIC CORPORATION			
	Starting method	Inverter			
	Motor output	kW	12.4		
	Case heater	kW	-		
	Lubricant	MEL32			
External finish			Galvanized steel sheets		
External dimension H x W x D	in.	57-1/8 x 34-11/16 x 21-11/16			
	mm	1,450 x 880 x 550			
Protection devices	High pressure protection	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)			
	Inverter circuit	Over-heat protection, Over-current protection			
	Compressor	Over-heat protection			
Refrigerant	Type x original charge	R410A x 13 lbs + 4 oz (6.0 kg)			
	Control	LEV and HIC circuit			
Net weight	lbs (kg)	512 (232)			
Heat exchanger	Water volume in plate	G	1.32		
		l	5.0		
		Water pressure Max.	psi	290	
		MPa	2.0		
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe, tube-in-tube structure		
Drawing	External	KS94G405			
	Wiring	KE94G219			
Standard attachment	Document	Installation Manual			
	Accessory	Details refer to External Drw			
Optional parts	joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G				
Remarks	<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>				

Notes: 1.Nominal cooling conditions (Test conditions are based on AHR1 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Water temperature: 86°F (30°C) 2.Nominal heating conditions (Test conditions are based on AHR1 1230) Indoor: 68°F D.B. (20°C D.B.), Water temperature: 68°F (20°C)	Unit converter
	BTU/h =kW x 3.412
	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P144ZSLMU-A		
Indoor Model			Non-Ducted	Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz		
Cooling capacity (Nominal)	*1	BTU/h	144,000		
		kW	42.2		
	(575)	Power input	7.11		
		Current input	7.9		
	(Rated)	BTU/h	137,000		
		kW	40.2		
	(575)	Power input	6.53	7.72	
		Current input	7.2	8.6	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	160,000		
		kW	46.9		
	(575)	Power input	7.45		
		Current input	8.3		
	(Rated)	BTU/h	152,000		
		kW	44.5		
	(575)	Power input	6.86	7.22	
		Current input	7.6	8.0	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity			
	Model/Quantity	P06~P96/1~31			
Sound pressure level (measured in anechoic room)	dB <A>	49.0			
Refrigerant piping diameter	Liquid pipe	in. (mm)			
	Gas pipe	in. (mm)			
Set Model					
Model			PQHY-P72ZLMU-A	PQHY-P72ZLMU-A	
Minimum Circuit Ampacity			A	5	
Maximum Overcurrent Protection			A	15	
Circulating water	Water flow rate	G/h	1,522 + 1,522		
		G/min (gpm)	25.4 + 25.4		
		m ³ /h	5.76 + 5.76		
		L/min	96 + 96		
		cfm	3.4 + 3.4		
	Pressure drop	psi	3.48	3.48	
		kPa	24	24	
	Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902		
G/min (gpm)		13.2 + 13.2 ~ 31.7 + 31.7			
m ³ /h		3.0 + 3.0 ~ 7.2 + 7.2			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter	Inverter	
	Motor output	kW	4.3	4.3	
	Case heater	kW	-	-	
	Lubricant		MEL32	MEL32	
External finish			Galvanized steel sheets	Galvanized steel sheets	
External dimension H x W x D	in.		43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16	
	mm		1,100 x 880 x 550	1,100 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	Over-heat protection	
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)	
	Control		LEV and HIC circuit		
Net weight	lbs (kg)		413 (187)	413 (187)	
Heat exchanger	Water volume in plate		plate type	plate type	
	G		1.32	1.32	
	l		5.0	5.0	
	Water pressure Max.	psi		290	290
MPa		2.0	2.0		
HIC circuit (HIC: Heat Inter-Change)			Copper pipe, tube-in-tube structure	Copper pipe, tube-in-tube structure	
Pipe between unit and distributor	Liquid pipe	in. (mm)	3/8 (9.52) Braze	3/8 (9.52) Braze	
	Gas pipe	in. (mm)	3/4 (19.05) Braze	3/4 (19.05) Braze	
Drawing	External		KS94G408		
	Wiring		KE94G219	KE94G219	
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-Y100CBK3 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2 Header: CMY-Y104, 108, 1010C-G		
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.		

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3,412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

MY 575V

Heat Source Model			PQHY-P168ZSLMU-A		
Indoor Model			Non-Ducted	Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz		
Cooling capacity (Nominal)	*1	BTU/h	168,000		
		kW	49.2		
	(575)	Power input	kW	9.33	
		Current input	A	10.4	
	(Rated)		BTU/h	161,000	
			kW	47.2	
(575)	Power input	kW	8.58	9.22	
	Current input	A	9.5	10.2	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	188,000		
		kW	55.1		
	(575)	Power input	kW	9.34	
		Current input	A	10.4	
	(Rated)		BTU/h	179,000	
			kW	52.5	
(575)	Power input	kW	8.60	8.03	
	Current input	A	9.5	8.9	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity		50~130% of heatsource unit capacity		
	Model/Quantity		P06~P96/1~36		
Sound pressure level (measured in anechoic room)		dB <A>	50.0		
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 (15.88) Brazed		
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed		

Set Model			PQHY-P96ZLMU-A	PQHY-P72ZLMU-A	
Model			PQHY-P96ZLMU-A	PQHY-P72ZLMU-A	
Minimum Circuit Ampacity	A		7	5	
Maximum Overcurrent Protection	A		15	15	
Circulating water	Water flow rate	G/h	1,522 + 1,522		
		G/min (gpm)	25.4 + 25.4		
		m ³ /h	5.76 + 5.76		
		L/min	96 + 96		
		cfm	3.4 + 3.4		
	Pressure drop	psi	3.48	3.48	
kPa		24	24		
Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902			
	G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7			
	m ³ /h	3.0 + 3.0 ~ 7.2 + 7.2			
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter	Inverter	
	Motor output	kW	6.0	4.3	
	Case heater	kW	-	-	
	Lubricant		MEL32	MEL32	
External finish			Galvanized steel sheets	Galvanized steel sheets	
External dimension H x W x D	in.		43-5/16 x 34-11/16 x 21-11/16	43-5/16 x 34-11/16 x 21-11/16	
	mm		1,100 x 880 x 550	1,100 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	Over-heat protection	
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)	
	Control		LEV and HIC circuit		
Net weight	lbs (kg)		413 (187)	413 (187)	
Heat exchanger	Water volume in plate	G	plate type		
		l	1.32	1.32	
	Water pressure Max.	psi	5.0	5.0	
		MPa	290	290	
		2.0	2.0		
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe, tube-in-tube structure	Copper pipe, tube-in-tube structure	
Pipe between unit and distributor	Liquid pipe	in. (mm)	3/8 (9.52) Brazed		
	Gas pipe	in. (mm)	7/8 (22.2) Brazed		
Drawing	External		KS94G408		
	Wiring		KE94G219	KE94G219	
Standard attachment	Document		Installation Manual		
	Accessory		Details refer to External Drw		
Optional parts			Heat Source Twinning kit: CMY-Y100CBK3 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2 Header: CMY-Y104, 108, 1010C-G		
Remarks			<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>		

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHR1 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3,412
2.Nominal heating conditions (Test conditions are based on AHR1 1230) Indoor: 68°F D.B. (20°C D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P19ZZSLMU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz			
Cooling capacity (Nominal)	*1	BTU/h	192,000			
		kW	56.3			
	(575)	Power input	kW	11.30		
		Current input	A	12.6		
	(Rated)		BTU/h	183,000		
			kW	53.6		
(575)	Power input	kW	10.40	10.98		
	Current input	A	11.6	12.2		
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	215,000			
		kW	63.0			
	(575)	Power input	kW	11.02		
		Current input	A	12.2		
	(Rated)		BTU/h	205,000		
			kW	60.1		
(575)	Power input	kW	10.16	8.90		
	Current input	A	11.3	9.9		
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity		50~130% of heatsource unit capacity			
	Model/Quantity		P06~P96/1~41			
Sound pressure level (measured in anechoic room)		dB <A>	51.0			
Refrigerant piping diameter	Liquid pipe	in. (mm)	5/8 (15.88) Brazed			
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed			

Set Model			PQHY-P96ZLMU-A		PQHY-P96ZLMU-A	
Minimum Circuit Ampacity		A	7		7	
Maximum Overcurrent Protection		A	15		15	
Circulating water	Water flow rate	G/h	1,522 + 1,522			
		G/min (gpm)	25.4 + 25.4			
		m ³ /h	5.76 + 5.76			
		L/min	96 + 96			
		cfm	3.4 + 3.4			
	Pressure drop	psi	3.48		3.48	
	kPa	24		24		
Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902				
	G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7				
	m ³ /h	3.0 + 3.0 ~ 7.2 + 7.2				
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter		Inverter	
	Motor output	kW	6.0		6.0	
	Case heater	kW	-		-	
	Lubricant		MEL32		MEL32	
External finish		Galvanized steel sheets		Galvanized steel sheets		
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16		43-5/16 x 34-11/16 x 21-11/16	
		mm	1,100 x 880 x 550		1,100 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)		R410A x 11 lbs + 1 oz (5.0 kg)	
	Control		LEV and HIC circuit			
Net weight		lbs (kg)	413 (187)		413 (187)	
Heat exchanger	Water volume in plate		plate type		plate type	
	G	1.32		1.32		
		l	5.0		5.0	
	Water pressure Max.	psi	290		290	
MPa		2.0		2.0		
HIC circuit (HIC: Heat Inter-Changer)		Copper pipe, tube-in-tube structure		Copper pipe, tube-in-tube structure		
Pipe between unit and distributor	Liquid pipe	in. (mm)	3/8 (9.52) Brazed		3/8 (9.52) Brazed	
	Gas pipe	in. (mm)	7/8 (22.2) Brazed		7/8 (22.2) Brazed	
Drawing	External		KS94G408			
	Wiring		KE94G219		KE94G219	
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts		Heat Source Twinning kit: CMY-Y100CBK3 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G				
Remarks		<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>				

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Heat Source Model			PQHY-P216ZSLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)	*1	BTU/h	216,000	
		kW	63.3	
	(575)	Power input	14.03	
		Current input	15.6	
	(Rated)	BTU/h	206,000	
		kW	60.4	
(575)	Power input	12.93	13.24	
	Current input	14.4	14.7	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal)	*2	BTU/h	243,000	
		kW	71.2	
	(575)	Power input	12.88	
		Current input	14.3	
	(Rated)	BTU/h	232,000	
		kW	68.0	
(575)	Power input	11.88	10.35	
	Current input	13.2	11.5	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity		
	Model/Quantity	P06~P96/2~46		
Sound pressure level (measured in anechoic room)		dB <A> 55.0		
Refrigerant piping diameter	Liquid pipe	in. (mm) 5/8 (15.88) Brazed		
	Gas pipe	in. (mm) 1-1/8 (28.58) Brazed		

Set Model			PQHY-P120ZLMU-A	PQHY-P96ZLMU-A
Minimum Circuit Ampacity		A	11	7
Maximum Overcurrent Protection		A	15	15
Circulating water	Water flow rate	G/h	1,522 + 1,522	
		G/min (gpm)	25.4 + 25.4	
		m ³ /h	5.76 + 5.76	
		L/min	96 + 96	
		cfm	3.4 + 3.4	
	Pressure drop	psi	3.48	3.48
		kPa	24	24
Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902		
		13.2 + 13.2 ~ 31.7 + 31.7		
		3.0 + 3.0 ~ 7.2 + 7.2		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	7.7	6.0
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish		Galvanized steel sheets		
External dimension H x W x D	in.	43-5/16 x 34-11/16 x 21-11/16		43-5/16 x 34-11/16 x 21-11/16
	mm	1,100 x 880 x 550		1,100 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)	R410A x 11 lbs + 1 oz (5.0 kg)
	Control		LEV and HIC circuit	
Net weight		lbs (kg)	413 (187)	413 (187)
Heat exchanger	plate type		plate type	plate type
	Water volume in plate	G	1.32	1.32
		l	5.0	5.0
	Water pressure Max.	psi	290	290
MPa		2.0	2.0	
HIC circuit (HIC: Heat Inter-Changer)		Copper pipe, tube-in-tube structure		
Pipe between unit and distributor	Liquid pipe	in. (mm)	1/2 (12.7) Brazed	1/2 (12.7) Brazed
	Gas pipe	in. (mm)	7/8 (22.2) Brazed	7/8 (22.2) Brazed
Drawing	External		KS94G408	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts		Heat Source Twinning kit: CMY-Y100CBK3 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G		
Remarks		<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F D.B. (40°C D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>		

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHR1 1230) Indoor: 81°F D.B./66°F W.B. (27°C D.B./19°C W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHR1 1230) Indoor: 68°F D.B. (20°C D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P240ZSLMU-A		
Indoor Model			Non-Ducted		Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz		
Cooling capacity (Nominal)	*1	BTU/h	240,000		
		kW	70.3		
	(575)	Power input	16.89		
		Current input	18.8		
	(Rated)	BTU/h	228,000		
			kW	66.8	
(575)	Power input	15.57	16.15		
	Current input	17.3	18.0		
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	270,000		
		kW	79.1		
	(575)	Power input	14.58		
		Current input	16.2		
	(Rated)	BTU/h	258,000		
			kW	75.6	
(575)	Power input	13.45	12.02		
	Current input	15.0	13.4		
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity			
	Model/Quantity	P06~P96/2~50			
Sound pressure level (measured in anechoic room)		dB <A> 57.0			
Refrigerant piping diameter	Liquid pipe	in. (mm) 5/8 (15.88) Brazed			
	Gas pipe	in. (mm) 1-1/8 (28.58) Brazed			

Set Model			PQHY-P120ZLMU-A		PQHY-P120ZLMU-A	
Minimum Circuit Ampacity		A	11		11	
Maximum Overcurrent Protection		A	15		15	
Circulating water	Water flow rate	G/h	1,522 + 1,522			
		G/min (gpm)	25.4 + 25.4			
		m ³ /h	5.76 + 5.76			
		L/min	96 + 96			
		cfm	3.4 + 3.4			
	Pressure drop	psi	3.48		3.48	
		kPa	24		24	
Operating volume range	G/h	793 + 793 ~ 1,902 + 1,902				
	G/min (gpm)	13.2 + 13.2 ~ 31.7 + 31.7				
	m ³ /h	3.0 + 3.0 ~ 7.2 + 7.2				
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter		Inverter	
	Motor output	kW	7.7		7.7	
	Case heater	kW	-		-	
	Lubricant		MEL32		MEL32	
External finish		Galvanized steel sheets		Galvanized steel sheets		
External dimension H x W x D		in.	43-5/16 x 34-11/16 x 21-11/16		43-5/16 x 34-11/16 x 21-11/16	
		mm	1,100 x 880 x 550		1,100 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R410A x 11 lbs + 1 oz (5.0 kg)		R410A x 11 lbs + 1 oz (5.0 kg)	
	Control		LEV and HIC circuit			
Net weight		lbs (kg)	413 (187)		413 (187)	
Heat exchanger	Water volume in plate		plate type		plate type	
	G	1.32		1.32		
		l	5.0		5.0	
	Water pressure Max.	psi	290		290	
MPa		2.0		2.0		
HIC circuit (HIC: Heat Inter-Changer)		Copper pipe, tube-in-tube structure		Copper pipe, tube-in-tube structure		
Pipe between unit and distributor	Liquid pipe	in. (mm)	1/2 (12.7) Brazed		1/2 (12.7) Brazed	
	Gas pipe	in. (mm)	7/8 (22.2) Brazed		7/8 (22.2) Brazed	
Drawing	External		KS94G408			
	Wiring		KE94G219		KE94G219	
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts		Heat Source Twinning kit: CMY-Y100CBK3 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G				
Remarks		<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>				

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

MY 575V

Heat Source Model			PQHY-P288ZSLMU-A		
Indoor Model			Non-Ducted	Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz		
Cooling capacity (Nominal)	*1	BTU/h	288,000		
		kW	84.4		
	(575)	Power input	kW	20.42	
		Current input	A	22.7	
	(Rated)	(575)	BTU/h	275,000	
			kW	80.6	
(575)	Power input	kW	18.82	21.43	
	Current input	A	20.9	23.9	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Heating capacity (Nominal)	*2	BTU/h	323,000		
		kW	94.7		
	(575)	Power input	kW	17.50	
		Current input	A	19.5	
	(Rated)	(575)	BTU/h	308,000	
			kW	90.3	
(575)	Power input	kW	16.13	16.05	
	Current input	A	17.9	17.9	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)		
	Circulating water	°F	50~113°F (10~45°C)		
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity			
	Model/Quantity	P06~P96/2~50			
Sound pressure level (measured in anechoic room)			dB <A> 57.0		
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/4 (19.05) Brazed		
	Gas pipe	in. (mm)	1-3/8 (34.93) Brazed		

Set Model			PQHY-P144ZLMU-A	PQHY-P144ZLMU-A
Model			PQHY-P144ZLMU-A	PQHY-P144ZLMU-A
Minimum Circuit Ampacity			A 13	13
Maximum Overcurrent Protection			A 20	20
Circulating water	Water flow rate	G/h	1,902 + 1,902	
		G/min (gpm)	31.7 + 31.7	
		m ³ /h	7.20 + 7.20	
		L/min	120 + 120	
		cfm	4.2 + 4.2	
	Pressure drop	psi	6.38	6.38
kPa		44	44	
Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054		
	G/min (gpm)	19.8 + 19.8 ~ 50.9 + 50.9		
	m ³ /h	4.5 + 4.5 ~ 11.6 + 11.6		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	Inverter scroll hermetic compressor x 1
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	AC&R Works, MITSUBISHI ELECTRIC CORPORATION
	Starting method		Inverter	Inverter
	Motor output	kW	9.5	9.5
	Case heater	kW	-	-
	Lubricant		MEL32	MEL32
External finish			Galvanized steel sheets	Galvanized steel sheets
External dimension H x W x D	in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16
	mm	1,450 x 880 x 550		1,450 x 880 x 550
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	High pressure sensor, High pressure switch at 4.15 MPa (601 psi)
	Inverter circuit		Over-heat protection, Over-current protection	Over-heat protection, Over-current protection
	Compressor		Over-heat protection	Over-heat protection
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)	R410A x 13 lbs + 4 oz (6.0 kg)
	Control		LEV and HIC circuit	
Net weight			lbs (kg) 512 (232)	512 (232)
Heat exchanger	Water volume in plate		G	1.32
			l	5.0
	Water pressure Max.	psi		290
		MPa		2.0
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe, tube-in-tube structure	Copper pipe, tube-in-tube structure
Pipe between unit and distributor	Liquid pipe	in. (mm)	1/2 (12.7) Brazed	
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed	
Drawing	External		KS94G409	
	Wiring		KE94G219	KE94G219
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Y200CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G	
Remarks			Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual. Due to continuing improvement, above specifications may be subject to change without notice. The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.) The ambient relative humidity of the Heat Source Unit needs to be kept below 80%. The Heat Source Unit should not be installed at outdoor. Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit. Be sure to provide interlocking for the unit operation and water circuit. Install the supplied insulation material to the unused drain-socket. When installing insulation material around both water and refrigerant piping, follow the installation manual.	

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHR1 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHR1 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P312ZSLMU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz			
Cooling capacity (Nominal)	*1	BTU/h	312,000			
		kW	91.4			
	(575)	Power input	kW	23.41		
		Current input	A	26.1		
	(Rated)	BTU/h		297,000		
			kW	87.0		
	(575)	Power input	kW	21.59	23.67	
		Current input	A	24.0	26.4	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	350,000			
		kW	102.6			
	(575)	Power input	kW	19.11		
		Current input	A	21.3		
	(Rated)	BTU/h		334,000		
			kW	97.9		
	(575)	Power input	kW	17.62	17.96	
		Current input	A	19.6	20.0	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity		50~130% of heatsource unit capacity			
	Model/Quantity		P06~P96/2~50			
Sound pressure level (measured in anechoic room)		dB <A>	58.0			
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/4 (19.05) Brazed			
	Gas pipe	in. (mm)	1-3/8 (34.93) Brazed			

Set Model			PQHY-P168ZLMU-A		PQHY-P144ZLMU-A	
Minimum Circuit Ampacity		A	16		13	
Maximum Overcurrent Protection		A	25		20	
Circulating water	Water flow rate	G/h	1,902 + 1,902			
		G/min (gpm)	31.7 + 31.7			
		m ³ /h	7.20 + 7.20			
		L/min	120 + 120			
		cfm	4.2 + 4.2			
	Pressure drop	psi	6.38		6.38	
	kPa	44		44		
Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054				
	G/min (gpm)	19.8 + 19.8 ~ 50.9 + 50.9				
	m ³ /h	4.5 + 4.5 ~ 11.6 + 11.6				
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter		Inverter	
	Motor output	kW	11.0		9.5	
	Case heater	kW	-		-	
	Lubricant		MEL32		MEL32	
External finish		Galvanized steel sheets		Galvanized steel sheets		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550		1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)		R410A x 13 lbs + 4 oz (6.0 kg)	
	Control		LEV and HIC circuit			
Net weight		lbs (kg)	512 (232)		512 (232)	
Heat exchanger	Water volume in plate		plate type		plate type	
		G	1.32		1.32	
		l	5.0		5.0	
	Water pressure Max.	psi	290		290	
MPa		2.0		2.0		
HIC circuit (HIC: Heat Inter-Changer)		Copper pipe, tube-in-tube structure		Copper pipe, tube-in-tube structure		
Pipe between unit and distributor	Liquid pipe	in. (mm)	5/8 (15.88) Brazed		5/8 (15.88) Brazed	
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed		1-1/8 (28.58) Brazed	
Drawing	External		KS94G409			
	Wiring		KE94G219		KE94G219	
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts		Heat Source Twinning kit: CMY-Y200CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G				
Remarks		<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>				

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

MY 575V

Heat Source Model			PQHY-P336ZSLMU-A	
Indoor Model			Non-Ducted	Ducted
Power source			3-phase 3-wire 575 V ±10% 60 Hz	
Cooling capacity (Nominal)	*1	BTU/h	336,000	
		kW	98.5	
	(575)	Power input	26.84	
		Current input	29.9	
	(Rated)	BTU/h	320,000	
		kW	93.8	
(575)	Power input	24.76	25.85	
	Current input	27.6	28.8	
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Heating capacity (Nominal)	*2	BTU/h	378,000	
		kW	110.8	
	(575)	Power input	20.77	
		Current input	23.1	
	(Rated)	BTU/h	361,000	
		kW	105.8	
(575)	Power input	19.16	20.05	
	Current input	21.3	22.3	
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)	
	Circulating water	°F	50~113°F (10~45°C)	
Indoor unit connectable	Total capacity	50~130% of heatsource unit capacity		
	Model/Quantity	P06~P96/2~50		
Sound pressure level (measured in anechoic room)			dB <A> 59.0	
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/4 (19.05) Brazed	
	Gas pipe	in. (mm)	1-5/8 (41.28) Brazed	

Set Model			PQHY-P168ZLMU-A	
Model			PQHY-P168ZLMU-A	PQHY-P168ZLMU-A
Minimum Circuit Ampacity			A	16
Maximum Overcurrent Protection			A	25
Circulating water	Water flow rate	G/h	1,902 + 1,902	
		G/min (gpm)	31.7 + 31.7	
		m ³ /h	7.20 + 7.20	
		L/min	120 + 120	
		cfm	4.2 + 4.2	
	Pressure drop	psi	6.38	6.38
kPa		44	44	
Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054		
	G/min (gpm)	19.8 + 19.8 ~ 50.9 + 50.9		
	m ³ /h	4.5 + 4.5 ~ 11.6 + 11.6		
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter	
	Motor output	kW	11.0	
	Case heater	kW	-	
Lubricant			MEL32	
External finish			Galvanized steel sheets	
External dimension H x W x D	in.		57-1/8 x 34-11/16 x 21-11/16	
	mm		1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection	
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)	
	Control		LEV and HIC circuit	
Net weight			lbs (kg)	512 (232)
Heat exchanger	plate type		plate type	
	Water volume in plate	G	1.32	
		l	5.0	
	Water pressure Max.	psi	290	
MPa		2.0		
HIC circuit (HIC: Heat Inter-Changer)			Copper pipe, tube-in-tube structure	
Pipe between unit and distributor	Liquid pipe	in. (mm)	5/8 (15.88) Brazed	
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed	
Drawing	External		KS94G409	
	Wiring		KE94G219	
Standard attachment	Document		Installation Manual	
	Accessory		Details refer to External Drw	
Optional parts			Heat Source Twinning kit: CMY-Y200CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G	
Remarks			<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>	

Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHR1 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHR1 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

1. SPECIFICATIONS

Z(S)LMU

WY 575V

Heat Source Model			PQHY-P360ZLMU-A			
Indoor Model			Non-Ducted		Ducted	
Power source			3-phase 3-wire 575 V ±10% 60 Hz			
Cooling capacity (Nominal)	*1	BTU/h	360,000			
		kW	105.5			
	(575)	Power input	kW	29.43		
		Current input	A	32.8		
	(Rated)		BTU/h	342,000		
			kW	100.2		
(575)	Power input	kW	27.17	27.41		
	Current input	A	30.3	30.5		
Temp. range of cooling	Indoor	W.B.	59~75°F (15~24°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Heating capacity (Nominal)	*2	BTU/h	405,000			
		kW	118.7			
	(575)	Power input	kW	22.85		
		Current input	A	25.4		
	(Rated)		BTU/h	387,000		
			kW	113.4		
(575)	Power input	kW	21.09	21.70		
	Current input	A	23.5	24.2		
Temp. range of heating	Indoor	D.B.	59~81°F (15~27°C)			
	Circulating water	°F	50~113°F (10~45°C)			
Indoor unit connectable	Total capacity		50~130% of heatsource unit capacity			
	Model/Quantity		P06~P96/2~50			
Sound pressure level (measured in anechoic room)		dB <A>	60.0			
Refrigerant piping diameter	Liquid pipe	in. (mm)	3/4 (19.05) Brazed			
	Gas pipe	in. (mm)	1-5/8 (41.28) Brazed			

Set Model			PQHY-P192ZLMU-A		PQHY-P168ZLMU-A	
Minimum Circuit Ampacity		A	20		16	
Maximum Overcurrent Protection		A	30		25	
Circulating water	Water flow rate	G/h	1,902 + 1,902			
		G/min (gpm)	31.7 + 31.7			
		m ³ /h	7.20 + 7.20			
		L/min	120 + 120			
		cfm	4.2 + 4.2			
	Pressure drop	psi	6.38		6.38	
kPa		44		44		
Operating volume range	G/h	1,189 + 1,189 ~ 3,054 + 3,054				
	G/min (gpm)	19.8 + 19.8 ~ 50.9 + 50.9				
	m ³ /h	4.5 + 4.5 ~ 11.6 + 11.6				
Compressor	Type x Quantity		Inverter scroll hermetic compressor x 1		Inverter scroll hermetic compressor x 1	
	Manufacture		AC&R Works, MITSUBISHI ELECTRIC CORPORATION		AC&R Works, MITSUBISHI ELECTRIC CORPORATION	
	Starting method		Inverter		Inverter	
	Motor output	kW	12.4		11.0	
	Case heater	kW	-		-	
	Lubricant		MEL32		MEL32	
External finish		Galvanized steel sheets		Galvanized steel sheets		
External dimension H x W x D		in.	57-1/8 x 34-11/16 x 21-11/16		57-1/8 x 34-11/16 x 21-11/16	
		mm	1,450 x 880 x 550		1,450 x 880 x 550	
Protection devices	High pressure protection		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)		High pressure sensor, High pressure switch at 4.15 MPa (601 psi)	
	Inverter circuit		Over-heat protection, Over-current protection		Over-heat protection, Over-current protection	
	Compressor		Over-heat protection		Over-heat protection	
Refrigerant	Type x original charge		R410A x 13 lbs + 4 oz (6.0 kg)		R410A x 13 lbs + 4 oz (6.0 kg)	
	Control		LEV and HIC circuit			
Net weight		lbs (kg)	512 (232)		512 (232)	
Heat exchanger	Water volume in plate		plate type		plate type	
	G	1.32		1.32		
		l	5.0		5.0	
	Water pressure Max.	psi	290		290	
MPa		2.0		2.0		
HIC circuit (HIC: Heat Inter-Changer)		Copper pipe, tube-in-tube structure		Copper pipe, tube-in-tube structure		
Pipe between unit and distributor	Liquid pipe	in. (mm)	5/8 (15.88) Brazed		5/8 (15.88) Brazed	
	Gas pipe	in. (mm)	1-1/8 (28.58) Brazed		1-1/8 (28.58) Brazed	
Drawing	External		KS94G409			
	Wiring		KE94G219		KE94G219	
Standard attachment	Document		Installation Manual			
	Accessory		Details refer to External Drw			
Optional parts		Heat Source Twinning kit: CMY-Y200CBK2 joint: CMY-Y102SS-G2, CMY-Y102LS-G2, CMY-Y202S-G2, CMY-Y302S-G2 Header: CMY-Y104, 108, 1010C-G				
Remarks		<p>Details on foundation work, duct work, insulation work, electrical wiring, power source switch, and other items shall be referred to the Installation Manual.</p> <p>Due to continuing improvement, above specifications may be subject to change without notice.</p> <p>The ambient temperature of the Heat Source Unit needs to be kept below 104°F.D.B. (40°C.D.B.)</p> <p>The ambient relative humidity of the Heat Source Unit needs to be kept below 80%.</p> <p>The Heat Source Unit should not be installed at outdoor.</p> <p>Be sure to mount a strainer (more than 50 meshes) at the water inlet piping of the unit.</p> <p>Be sure to provide interlocking for the unit operation and water circuit.</p> <p>Install the supplied insulation material to the unused drain-socket.</p> <p>When installing insulation material around both water and refrigerant piping, follow the installation manual.</p>				

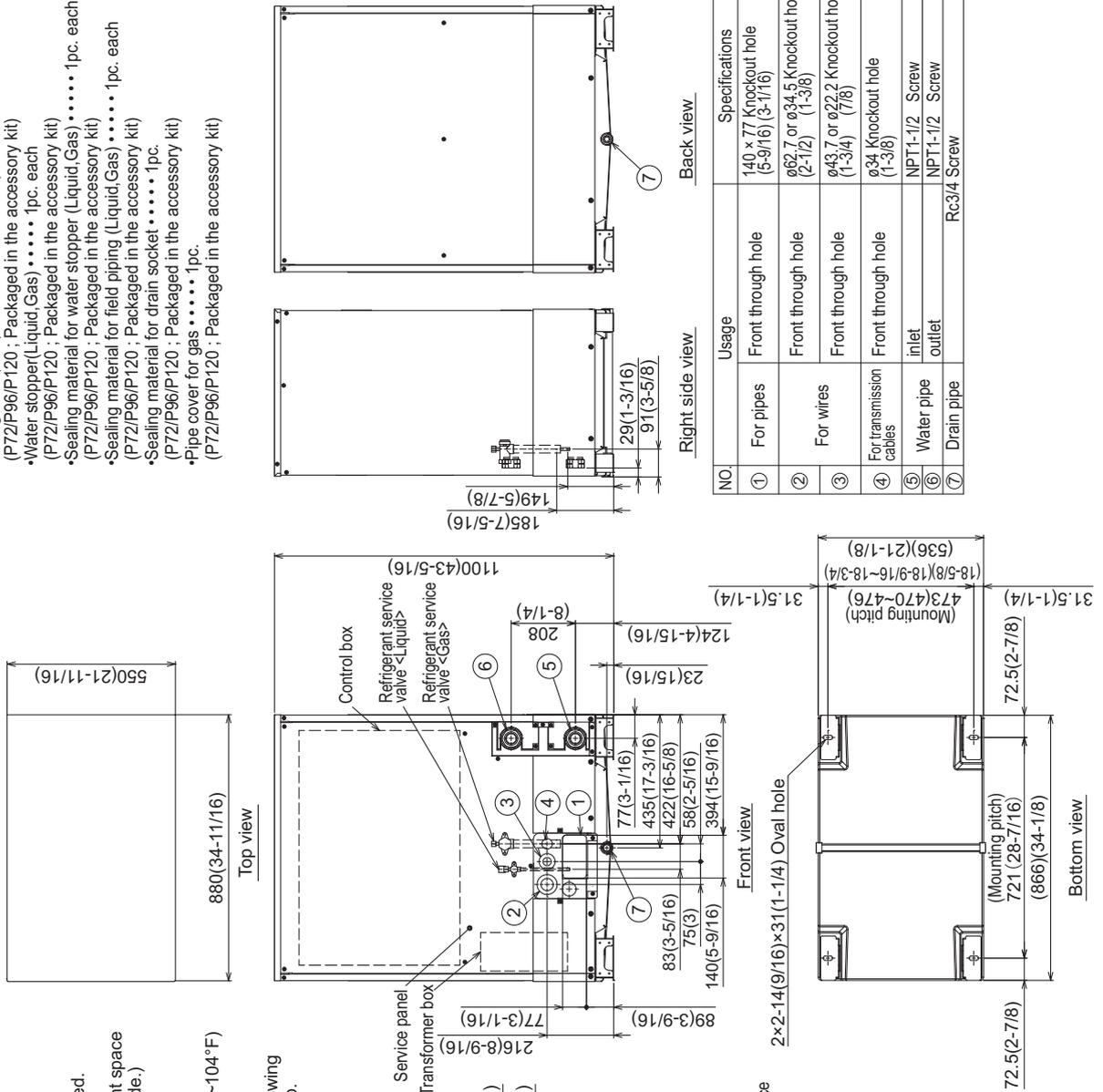
Notes:	Unit converter
1.Nominal cooling conditions (Test conditions are based on AHRI 1230) Indoor: 81°F.D.B./66°F.W.B. (27°C.D.B./19°C.W.B.), Water temperature: 86°F (30°C)	BTU/h =kW x 3.412
2.Nominal heating conditions (Test conditions are based on AHRI 1230) Indoor: 68°F.D.B. (20°C.D.B.), Water temperature: 68°F (20°C)	cfm =m ³ /min x 35.31
	lbs =kg/0.4536
	*Above specification data is subject to rounding variation.

PQHY-P72, 96, 120ZLMU-A

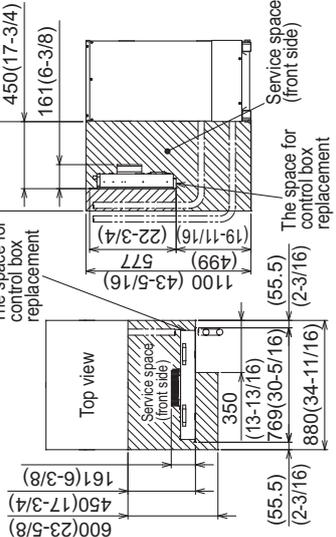
Unit: mm(in)

- <Accessories>
- Refrigerant (Liquid) conn. pipe.....1pc.
(P72/P96/P120 ; Packaged in the accessory kit)
 - Refrigerant (Gas) conn. elbow.....1pc.
(P72/P96/P120 ; Packaged in the accessory kit)
 - Water stopper(Liquid,Gas).....1pc. each
(P72/P96/P120 ; Packaged in the accessory kit)
 - Sealing material for water stopper (Liquid,Gas).....1pc. each
(P72/P96/P120 ; Packaged in the accessory kit)
 - Sealing material for field piping (Liquid,Gas).....1pc. each
(P72/P96/P120 ; Packaged in the accessory kit)
 - Sealing material for drain socket.....1pc.
(P72/P96/P120 ; Packaged in the accessory kit)
 - Pipe cover for gas.....1pc.
(P72/P96/P120 ; Packaged in the accessory kit)

- Note1. Close a hole of the water piping, the refrigerant piping, the power supply, and the control wiring and unused knockout holes with the putty etc. so as not to infiltrate rain water etc.(field erection work)
- Note2. At the time of product shipment, the front side piping specification serves as the local drainage connection. When connecting on the rear side, please remove the rear side plug sealing corks, and attach a front side. Ensure there is no leak after the attachment has been fitted.
- Note3. Take notice of service space as Fig.A. (In case of single installation, 600mm(23-5/8) or more of back space as front space makes easier access when servicing the unit from rear side.)
- Note4. If water pipes or refrigerant pipes stretch upward, required space for service and maintenance due to replacement of control box is shown in Fig.B.
- Note5. Environmental condition for installation: -20~40°C(DB)(-4~104°F) as indoor installation.
- Note6. In case the temperature around the heat source unit has possibility to drop under 0°C(32°F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.
- Circulate the water all the time even if the heat source unit is not in operation.
 - Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.
- Note7. Ensure that the drain piping is downward with a pitch of more than 1/100.
- Note8. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248°F).



NO	Usage	Specifications
①	For pipes	Front through hole 140 x 77 Knockout hole (5-9/16)(3-1/16)
②	For wires	Front through hole ø2.7 or ø34.5 Knockout hole (2-1/2)(1-3/8)
③	For transmission cables	Front through hole ø43.7 or ø22.2 Knockout hole (1-3/4)(7/8)
④	Water pipe inlet	Front through hole ø34 Knockout hole (1-3/8)
⑤	Water pipe outlet	NPT1-1/2 Screw
⑥	Drain pipe	NPT1-1/2 Screw
⑦		Rc3/4 Screw



Connecting pipe specifications

Model	Refrigerant pipe		Service valve		Diameter
	Liquid	Gas	Liquid	Gas	
PQHY-P72ZLMU-A	ø9.52 Brazeed (3/8) *1	ø9.05 Brazeed (3/4) *1 *4	ø9.52 Brazeed (3/8)	ø25.4 (1)	ø25.4 (1)
PQHY-P96ZLMU-A	ø9.52 Brazeed (3/8) *1	ø12.7 Brazeed (1/2) *2 *4	ø9.52 Brazeed (3/8)	ø25.4 (1)	
PQHY-P120ZLMU-A	ø9.52 Brazeed (3/8) *1	ø12.7 Brazeed (1/2) *3 *4	ø9.52 Brazeed (3/8)	ø25.4 (1)	

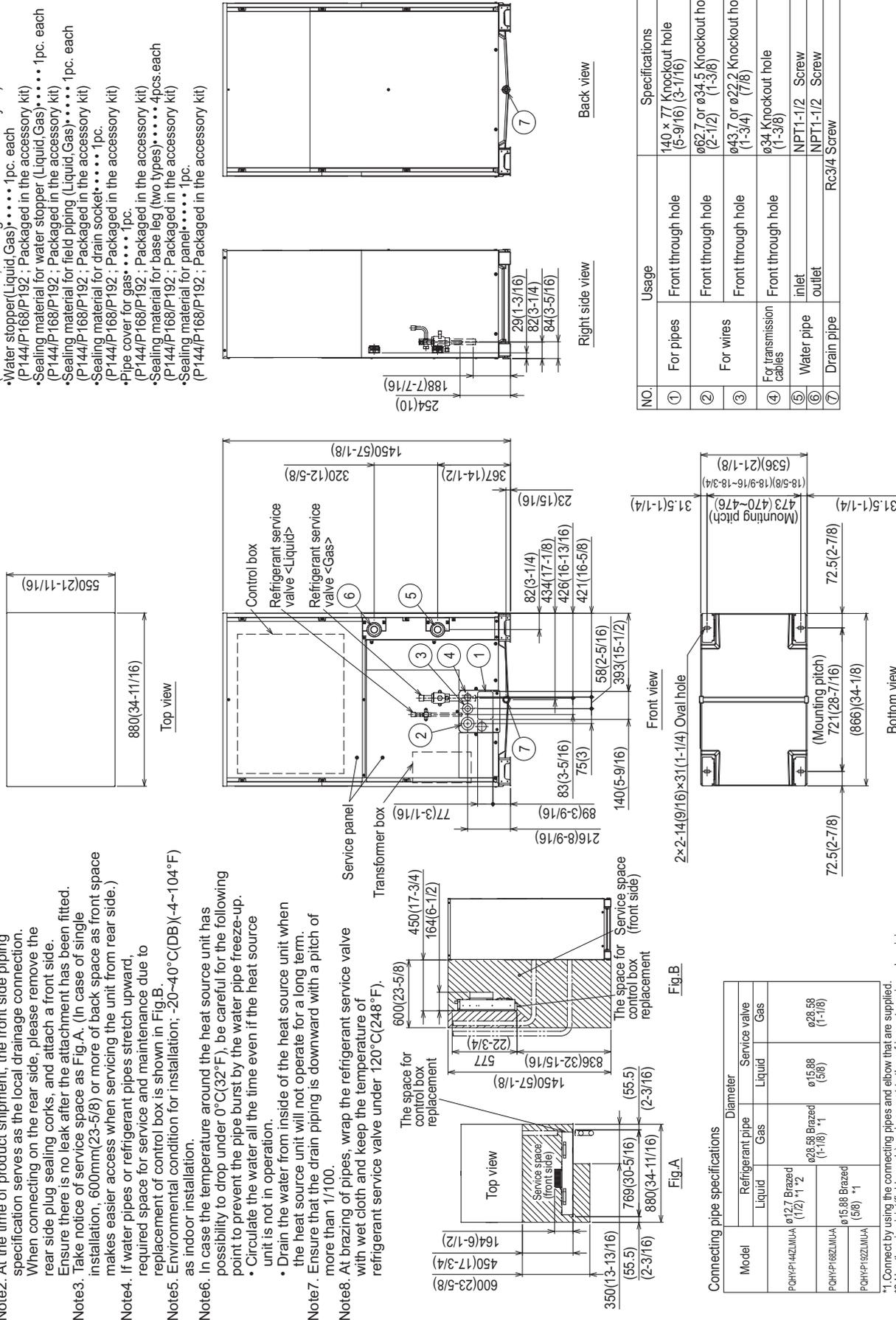
*1 Connect by using the connecting pipes and elbow that are supplied.
 *2 Total length is 2055mm.
 *3 Total length is 4011mm (131ft).
 *4 Use the pipe joint (field supply) and connect to the refrigerant service valve piping.

PQHY-P144, 168, 192ZLMU-A

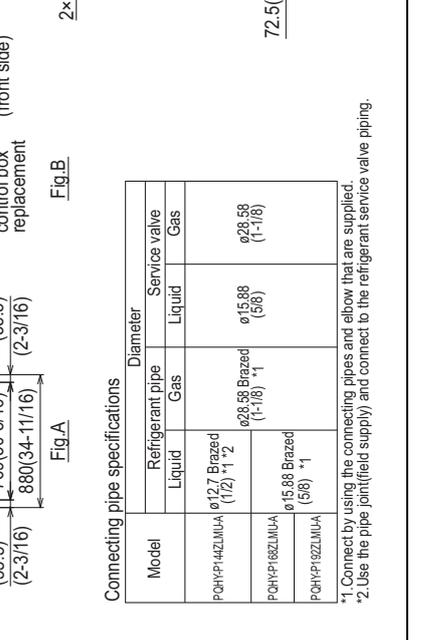
Unit: mm(in)

<Accessories>

- Refrigerant (Liquid) conn. pipe..... 1pc.
(P144/P168/P192; Packaged in the accessory kit)
- Refrigerant (Gas) conn. elbow..... 1pc.
(P144/P168/P192; Packaged in the accessory kit)
- Water stopper(Liquid,Gas)..... 1pc. each
(P144/P168/P192; Packaged in the accessory kit)
- Sealing material for water stopper (Liquid,Gas)..... 1pc. each
(P144/P168/P192; Packaged in the accessory kit)
- Sealing material for field piping (Liquid,Gas)..... 1pc. each
(P144/P168/P192; Packaged in the accessory kit)
- Sealing material for drain socket..... 1pc.
(P144/P168/P192; Packaged in the accessory kit)
- Pipe cover for gas..... 1pc.
(P144/P168/P192; Packaged in the accessory kit)
- Sealing material for base leg (two types)..... 4pcs each
(P144/P168/P192; Packaged in the accessory kit)
- Sealing material for panel..... 1pc.
(P144/P168/P192; Packaged in the accessory kit)



- Note1. Close a hole of the water piping, the refrigerant piping, the power supply, and the control wiring and unused knockout holes with the putty etc. so as not to infiltrate rain water etc. (field erection work)
- Note2. At the time of product shipment, the front side piping specification serves as the local drainage connection. When connecting on the rear side, please remove the rear side plug sealing corks, and attach a front side. Ensure there is no leak after the attachment has been fitted.
- Note3. Take notice of service space as Fig.A. (In case of single installation, 600mm(23-5/8) or more of back space as front space makes easier access when servicing the unit from rear side.)
- Note4. If water pipes or refrigerant pipes stretch upward, required space for service and maintenance due to replacement of control box is shown in Fig.B.
- Note5. Environmental condition for installation: -20~40°C(DB)(-4~104°F) as indoor installation.
- Note6. In case the temperature around the heat source unit has possibility to drop under 0°C(32°F), be careful for the following point to prevent the pipe burst by the water pipe freeze-up.
 - Circulate the water all the time even if the heat source unit is not in operation.
 - Drain the water from inside of the heat source unit when the heat source unit will not operate for a long term.
- Note7. Ensure that the drain piping is downward with a pitch of more than 1/100.
- Note8. At brazing of pipes, wrap the refrigerant service valve with wet cloth and keep the temperature of refrigerant service valve under 120°C(248°F).



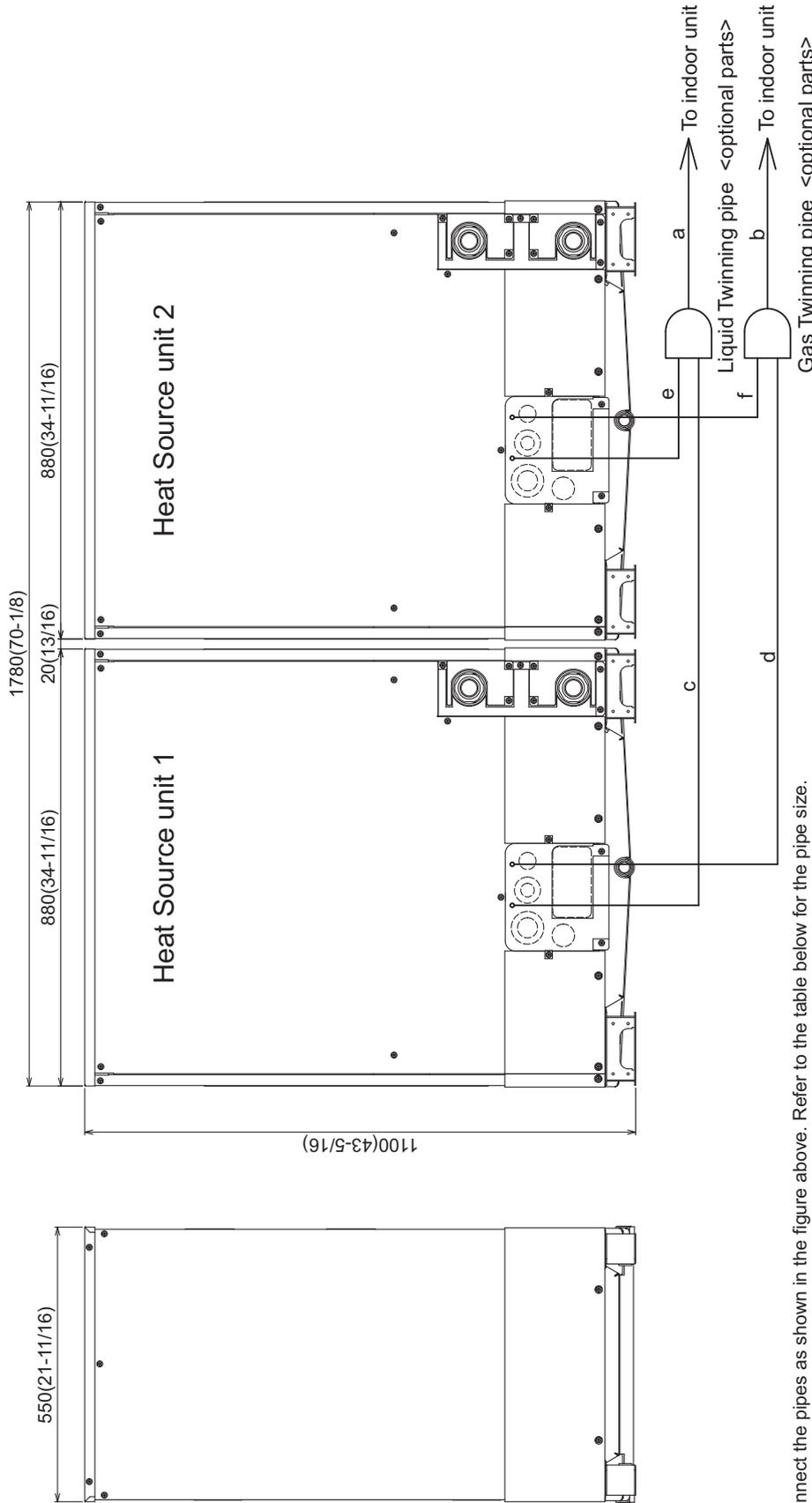
Connecting pipe specifications

Model	Refrigerant pipe		Service valve		Diameter
	Liquid	Gas	Liquid	Gas	
PQHY-P144ZLMU-A	φ12.7 Brazed (1/2) *1 *2			Gas	φ28.58 (1-1/8)
PQHY-P168ZLMU-A	φ28.58 Brazed (1-1/8) *1		φ15.88 (5/8)	Liquid	φ28.58 (1-1/8)
PQHY-P192ZLMU-A	φ15.88 Brazed (5/8) *1			Gas	φ28.58 (1-1/8)

*1. Connect by using the connecting pipes and elbow that are supplied.
 *2. Use the pipe joint(field supply) and connect to the refrigerant service valve piping.

PQHY-P144, 168, 192, 216, 240ZSLMU-A

Unit: mm(in)



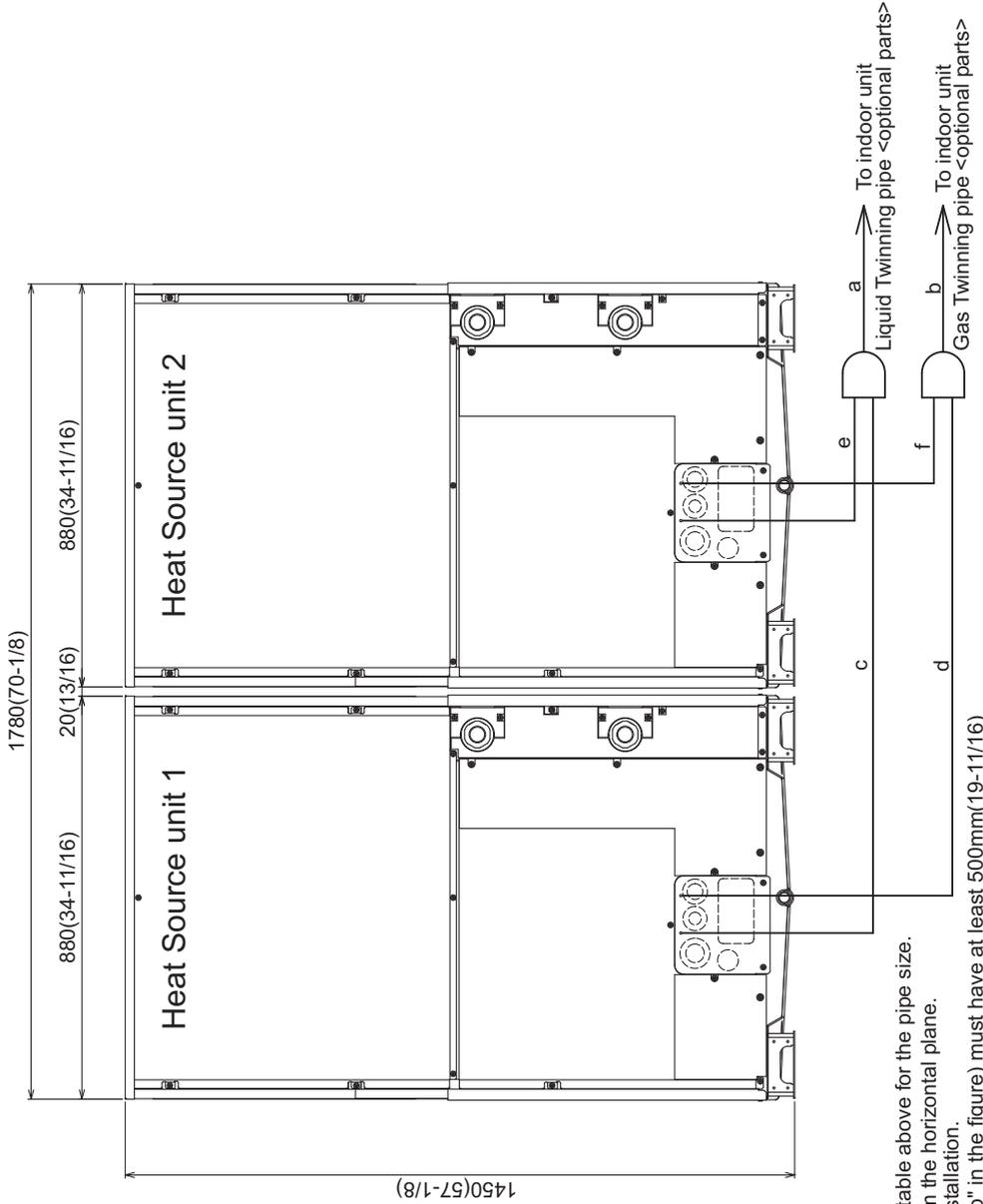
- Note 1. Connect the pipes as shown in the figure above. Refer to the table below for the pipe size.
 2. Twinning pipe should not be tilted more than 15 degrees from the horizontal plane.
 3. See the Installation Manual for the details of Twinning pipe installation.
 4. The pipe section before the Twinning pipe (sections "a" and "b" in the figure) must have at least 500mm(19-11/16) of straight section (*including the straight pipe that is supplied with the Twinning pipe).
 5. Only use the Twinning pipe by Mitsubishi (optional parts).

Twinning pipe connection size

Package unit name	PQHY-P144ZSLMU-A	PQHY-P168ZSLMU-A	PQHY-P192ZSLMU-A	PQHY-P216ZSLMU-A	PQHY-P240ZSLMU-A
Heat Source unit 1	PQHY-P72ZLMU-A	PQHY-P96ZLMU-A	PQHY-P120ZLMU-A	PQHY-P144ZLMU-A	PQHY-P168ZLMU-A
Heat Source unit 2	PQHY-P72ZLMU-A	PQHY-P96ZLMU-A	PQHY-P120ZLMU-A	PQHY-P144ZLMU-A	PQHY-P168ZLMU-A
Twinning pipe Kit(optional parts)	CMY-Y100CBK3				
Indoor unit~Twinning pipe	Liquid a	ø12.7(1/2)		ø15.88(5/8)	
	Gas b	ø28.58(1-1/8)			
Twinning pipe~Heat Source unit 1	Liquid c	ø9.52(3/8)		ø12.7(1/2)	
	Gas d	ø19.05(3/4)		ø22.2(7/8)	
Twinning pipe~Heat Source unit 2	Liquid e	ø9.52(3/8)		ø12.7(1/2)	
	Gas f	ø19.05(3/4)		ø22.2(7/8)	

PQRY-P288, 312, 336, 360ZSLMU-A

Unit: mm(in)



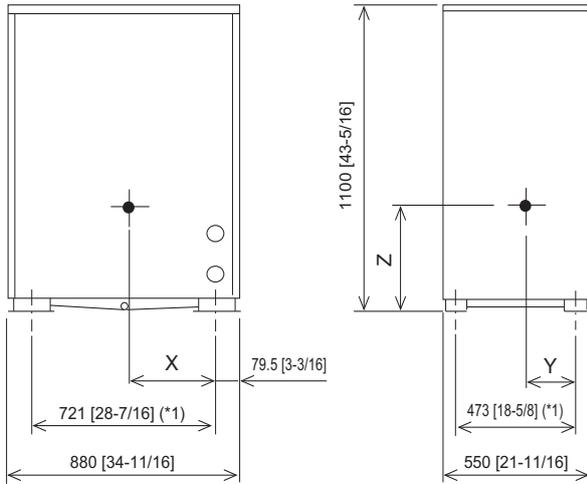
- Note 1. Connect the pipes as shown in the figure above. Refer to the table above for the pipe size.
- 2. Twinning pipes should not be tilted more than 15 degrees from the horizontal plane.
- 3. See the Installation Manual for the details of Twinning pipe installation.
- 4. The pipe section before the Twinning pipe (sections "a" and "b" in the figure) must have at least 500mm(19-11/16) of straight section (*including the straight pipe that is supplied with the Twinning pipe).
- 5. Only use the Twinning pipe by Mitsubishi (optional parts).

Twining pipe connection size

Package unit name	PQHY-P288ZSLMU-A	PQHY-P312ZSLMU-A	PQHY-P336ZSLMU-A	PQHY-P360ZSLMU-A
Component unit name	PQHY-P144ZLMU-A	PQHY-P168ZLMU-A	PQHY-P168ZLMU-A	PQHY-P192ZLMU-A
Component unit name	PQHY-P144ZLMU-A	PQHY-P144ZLMU-A	PQHY-P168ZLMU-A	PQHY-P168ZLMU-A
Twining Kit(optional parts)	CMY-Y200CBK2			
Indoor unit-Twinning pipe	ø19.05(3/4)			
Indoor unit-Twinning pipe	a	b	c	d
Gas	ø34.93(1-3/8)	ø15.88(5/8)	ø15.88(5/8)	ø41.28(1-5/8)
Liquid	ø12.7(1/2)	ø15.88(5/8)	ø15.88(5/8)	ø15.88(5/8)
Twining pipe-Heat Source unit 1	e	f	e	f
Gas	ø28.58(1-1/8)	ø15.88(5/8)	ø15.88(5/8)	ø15.88(5/8)
Liquid	ø12.7(1/2)	ø15.88(5/8)	ø15.88(5/8)	ø15.88(5/8)
Twining pipe-Heat Source unit 2	e	f	e	f
Gas	ø28.58(1-1/8)	ø15.88(5/8)	ø15.88(5/8)	ø15.88(5/8)

PQHY-P72, 96, 120ZLMU-A

Unit: mm [in.]

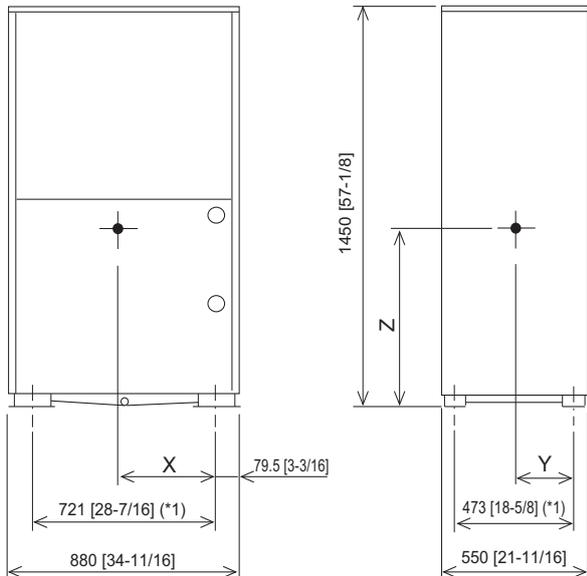


Model	X	Y	Z
PQHY-P72ZLMU-A	372 [14-11/16]	225 [8-7/8]	443 [17-1/2]
PQHY-P96ZLMU-A	373 [14-11/16]	226 [8-15/16]	443 [17-1/2]
PQHY-P120ZLMU-A	373 [14-11/16]	226 [8-15/16]	443 [17-1/2]

*1 Mounting Pitch

PQHY-P144, 168, 192ZLMU-A

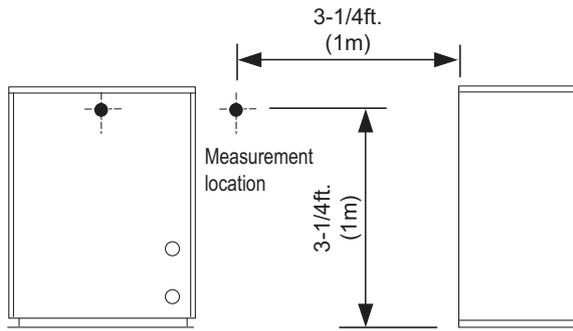
Unit: mm [in.]



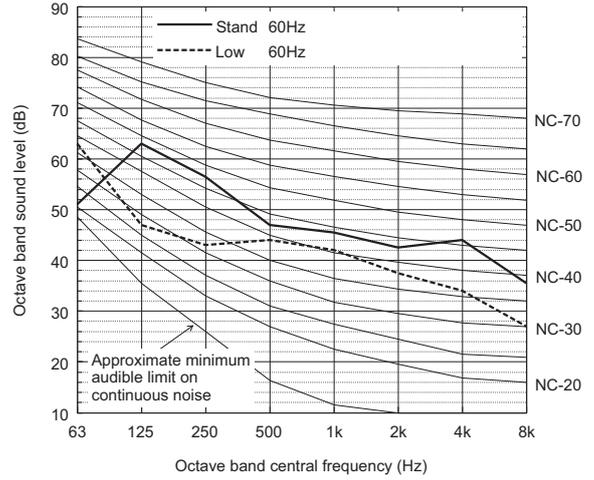
Model	X	Y	Z
PQHY-P144ZLMU-A	400 [15-3/4]	226 [8-15/16]	620 [24-7/16]
PQHY-P168ZLMU-A	400 [15-3/4]	226 [8-15/16]	620 [24-7/16]
PQHY-P192ZLMU-A	400 [15-3/4]	226 [8-15/16]	620 [24-7/16]

*1 Mounting Pitch

Measurement condition
PQHY-P72, 96, 120ZLMU-A



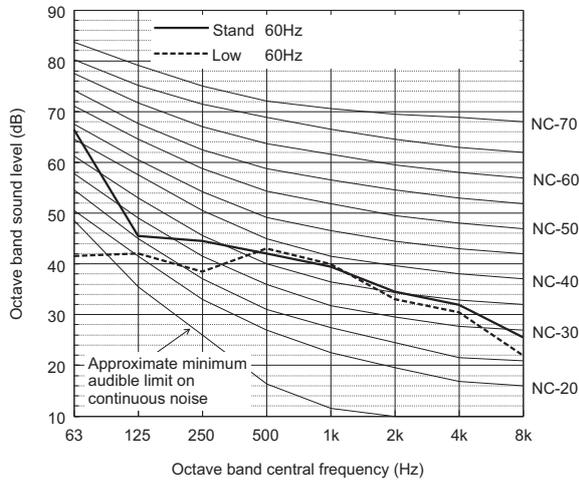
Sound level of PQHY-P120ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	51.0	63.0	56.5	47.0	45.5	42.5	44.0	35.5	54.0
Low noise mode	60Hz	63.0	47.0	43.0	44.0	42.0	37.5	34.0	27.0	47.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

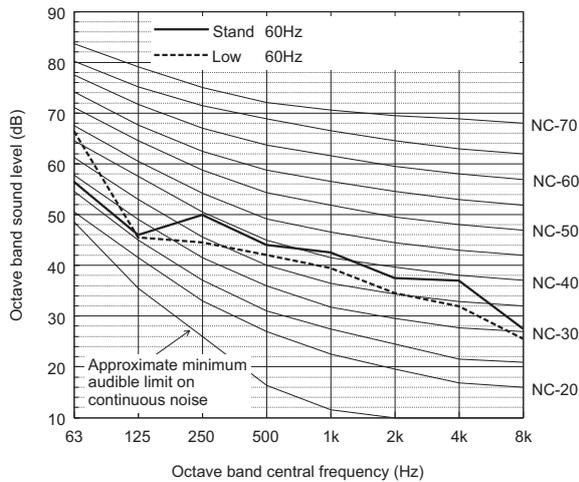
Sound level of PQHY-P72ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	66.5	45.5	44.5	42.0	39.5	34.5	32.0	25.5	46.0
Low noise mode	60Hz	41.5	42.0	38.5	43.0	40.0	33.0	30.5	22.0	44.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQHY-P96ZLMU-A

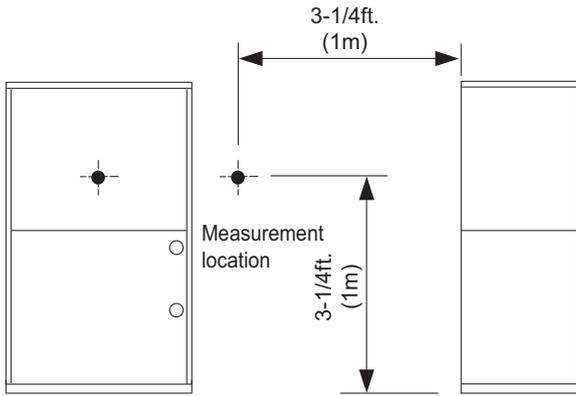


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	56.5	46.0	50.0	44.0	42.5	37.5	37.0	27.5	48.0
Low noise mode	60Hz	66.5	45.5	44.5	42.0	39.5	34.5	32.0	25.5	46.0

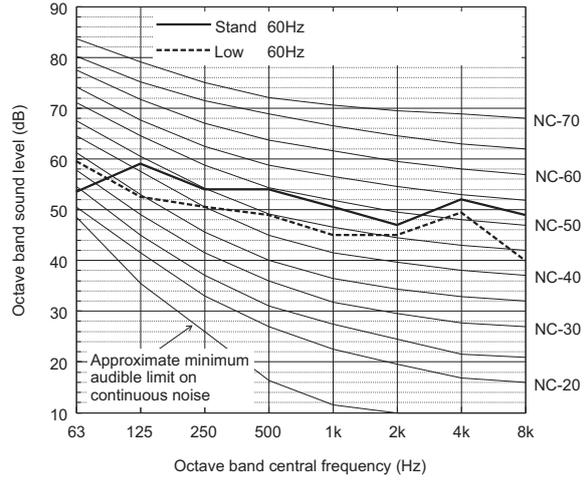
When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

• Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.

Measurement condition
PQHY-P144, 168, 192ZLMU-A



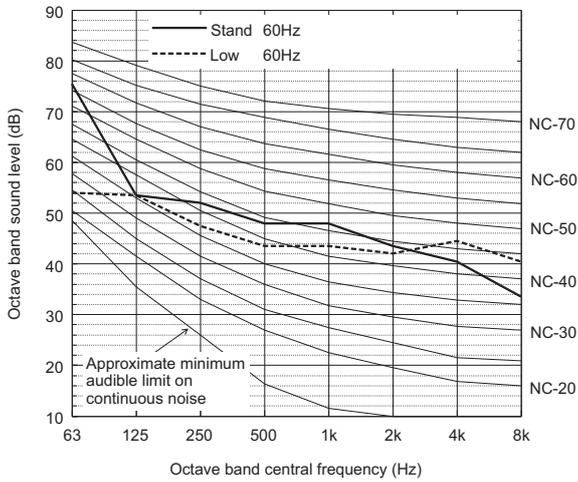
Sound level of PQHY-P192ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	53.5	59.0	54.0	54.0	50.5	47.0	52.0	49.0	58.0
Low noise mode	60Hz	59.5	52.5	50.5	49.0	45.0	45.0	49.5	40.0	54.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

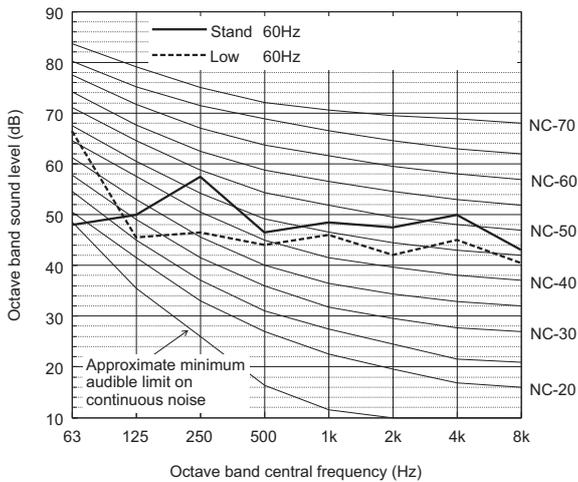
Sound level of PQHY-P144ZLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	75.5	53.5	52.0	48.0	48.0	43.5	40.5	33.5	54.0
Low noise mode	60Hz	54.0	53.5	47.5	43.5	43.5	42.0	44.5	40.5	50.5

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQHY-P168ZLMU-A

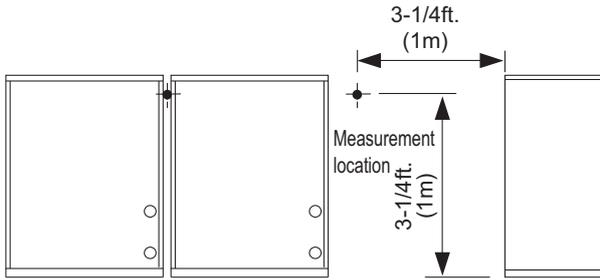


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	48.0	50.0	57.5	46.5	48.5	47.5	50.0	43.0	56.0
Low noise mode	60Hz	66.5	45.5	46.5	44.0	46.0	42.0	45.0	40.5	51.5

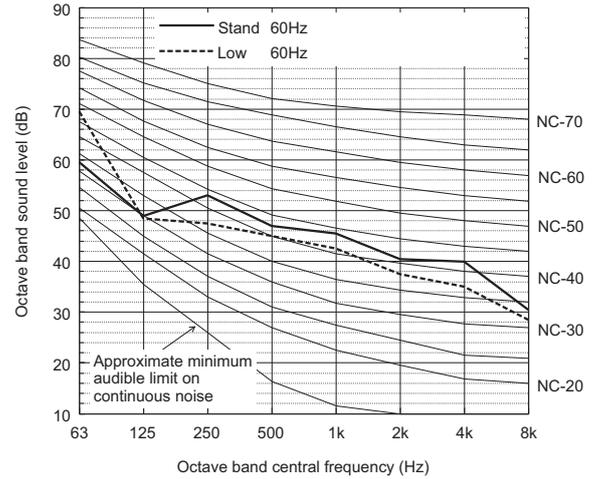
When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

♦ Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.

Measurement condition
PQHY-P144, 168, 192, 216, 240ZSLMU-A



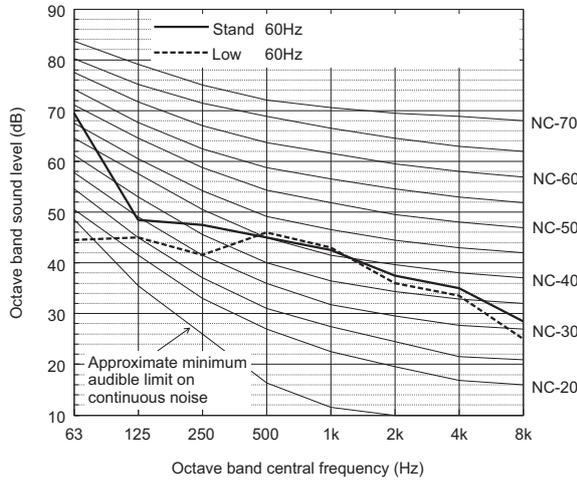
Sound level of PQHY-P192ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	59.5	49.0	53.0	47.0	45.5	40.5	40.0	30.5	51.0
Low noise mode	60Hz	69.5	48.5	47.5	45.0	42.5	37.5	35.0	28.5	49.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

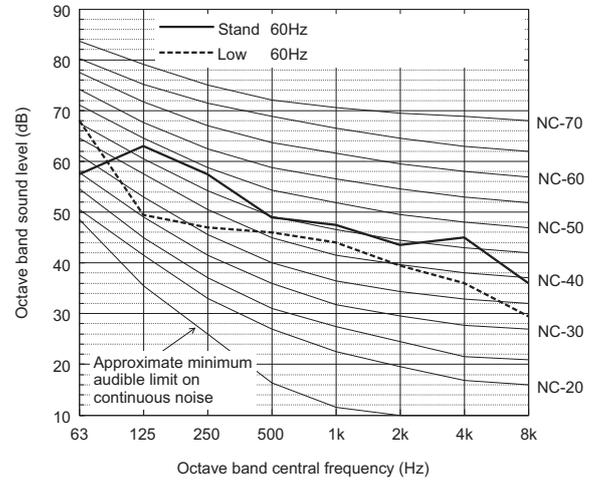
Sound level of PQHY-P144ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	69.5	48.5	47.5	45.0	42.5	37.5	35.0	28.5	49.0
Low noise mode	60Hz	44.5	45.0	41.5	46.0	43.0	36.0	33.5	25.0	47.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

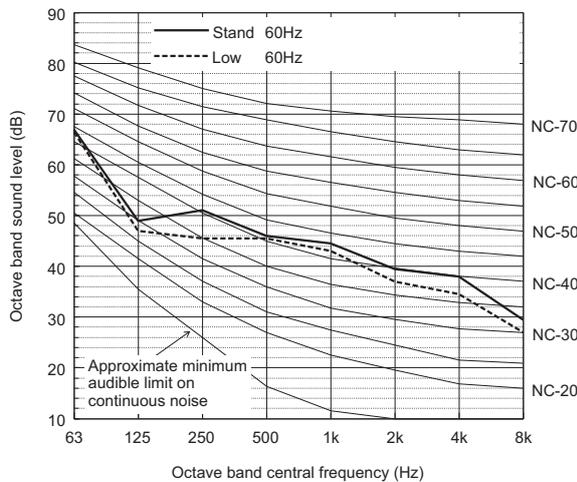
Sound level of PQHY-P216ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	57.5	63.0	57.5	49.0	47.5	43.5	45.0	36.0	55.0
Low noise mode	60Hz	68.0	49.5	47.0	46.0	44.0	39.5	36.0	29.5	49.5

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

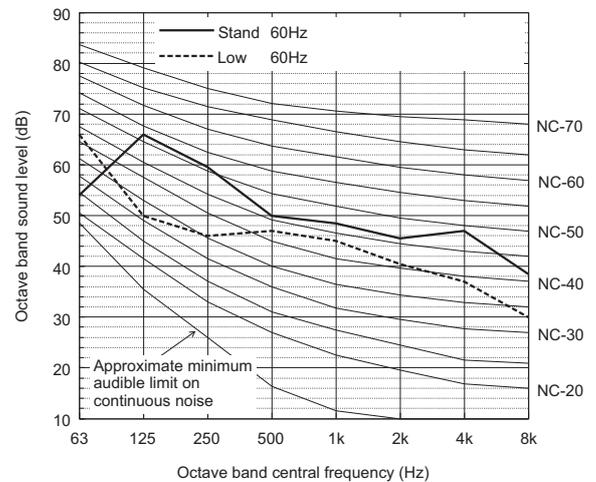
Sound level of PQHY-P168ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	67.0	49.0	51.0	46.0	44.5	39.5	38.0	29.5	50.0
Low noise mode	60Hz	66.5	47.0	45.5	45.5	43.0	37.0	34.5	27.0	48.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQHY-P240ZSLMU-A

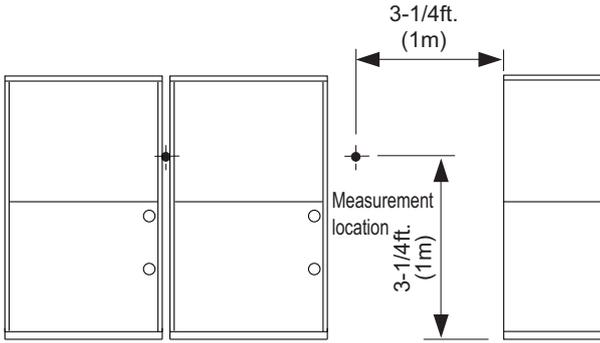


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	54.0	66.0	59.5	50.0	48.5	45.5	47.0	38.5	57.0
Low noise mode	60Hz	66.0	50.0	46.0	47.0	45.0	40.5	37.0	30.0	50.0

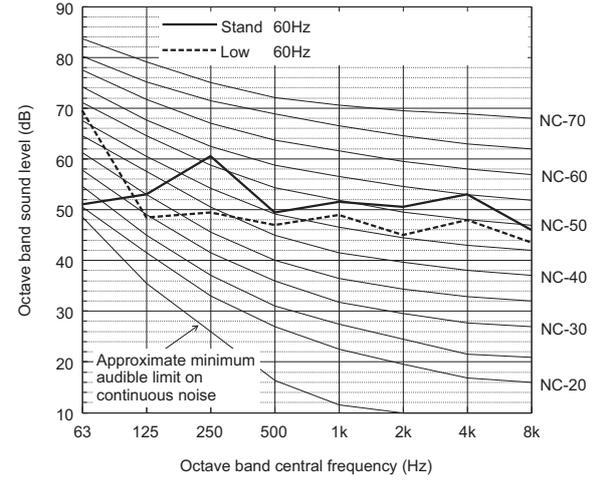
When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

• Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.

Measurement condition
PQHY-P288, 312, 336, 360ZSLMU-A



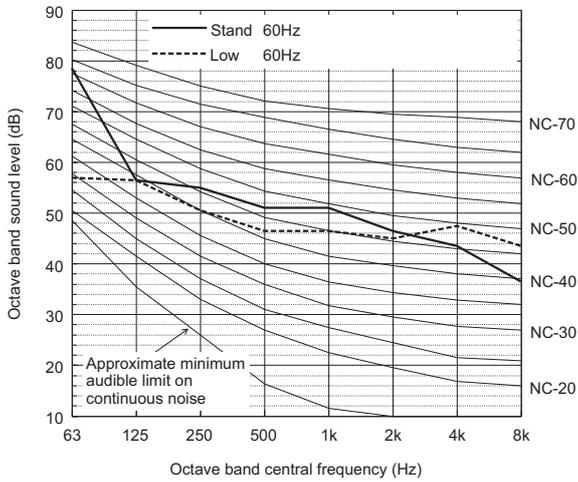
Sound level of PQHY-P336ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	51.0	53.0	60.5	49.5	51.5	50.5	53.0	46.0	59.0
Low noise mode	60Hz	69.5	48.5	49.5	47.0	49.0	45.0	48.0	43.5	54.5

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

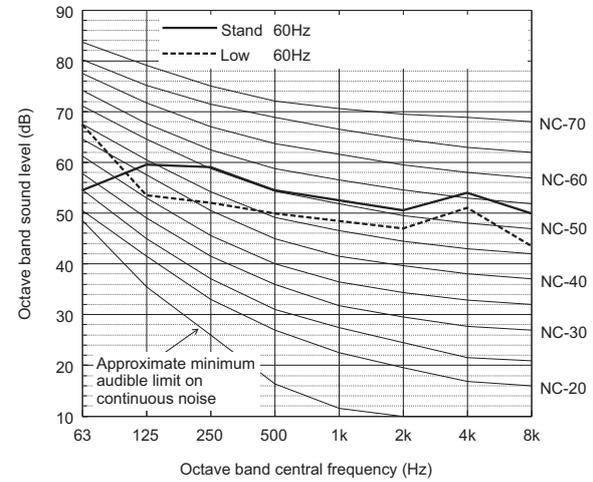
Sound level of PQHY-P288ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	78.5	56.5	55.0	51.0	51.0	46.5	43.5	36.5	57.0
Low noise mode	60Hz	57.0	56.5	50.5	46.5	46.5	45.0	47.5	43.5	53.5

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

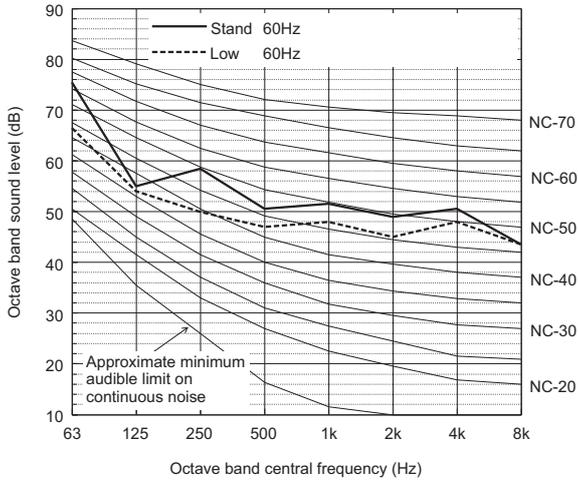
Sound level of PQHY-P360ZSLMU-A



		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	54.5	59.5	59.0	54.5	52.5	50.5	54.0	50.0	60.0
Low noise mode	60Hz	67.5	53.5	52.0	50.0	48.5	47.0	51.0	43.5	56.0

When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

Sound level of PQHY-P312ZSLMU-A

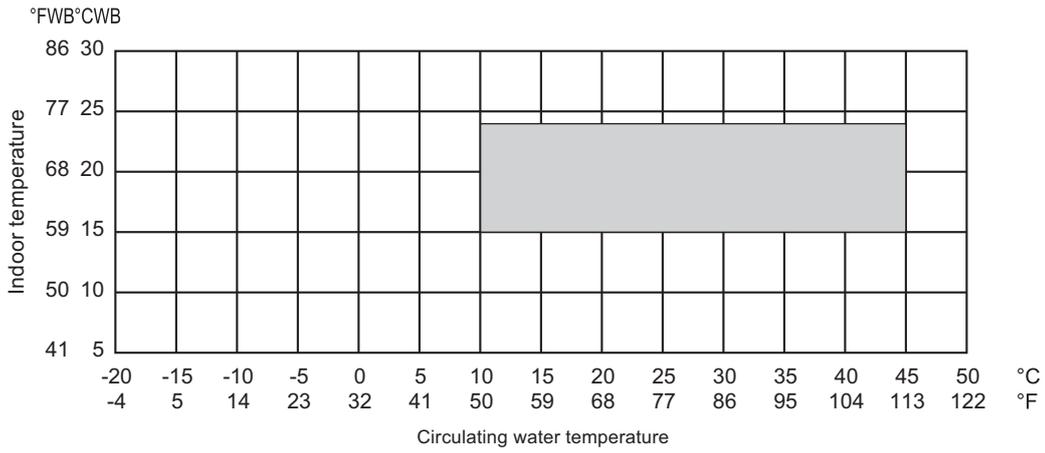


		63	125	250	500	1k	2k	4k	8k	dB(A)
Standard	60Hz	75.5	55.0	58.5	50.5	51.5	49.0	50.5	43.5	58.0
Low noise mode	60Hz	66.5	54.0	50.0	47.0	48.0	45.0	48.0	43.5	54.0

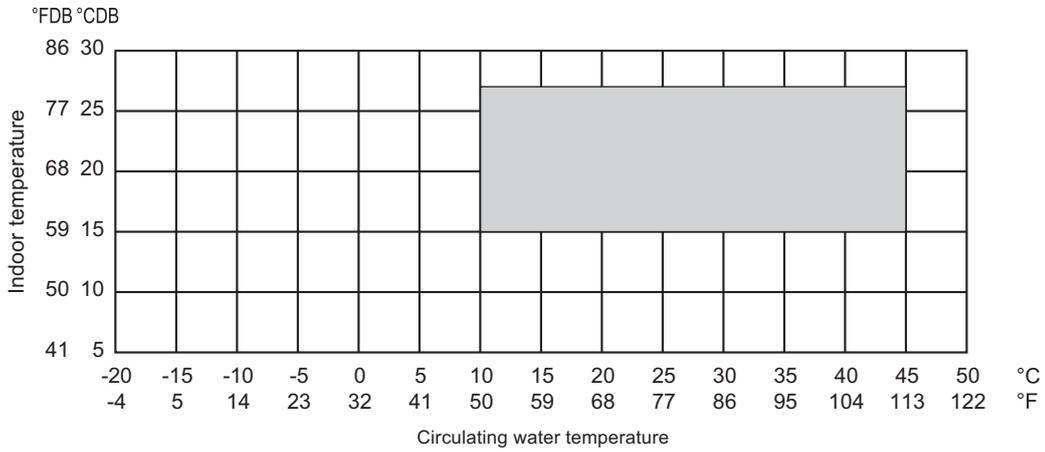
When Low noise mode is set, the A/C system's capacity is limited. The system could return to normal operation from Low noise mode automatically in the case that the operation condition is severe.

◆ Depending on the operation conditions, the unit generates noise caused by valve actuation, refrigerant flow, and pressure changes when operating normally. Please consider to avoid location where quietness is required.

• Cooling



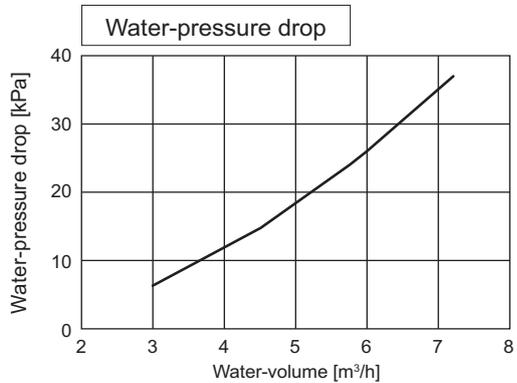
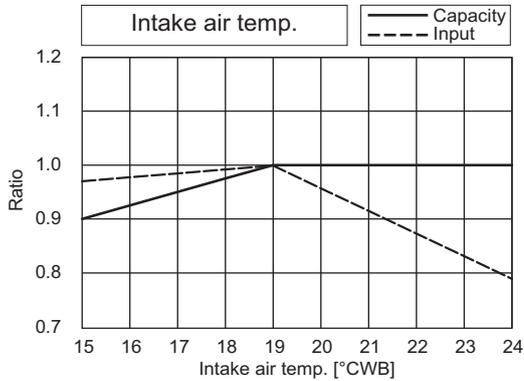
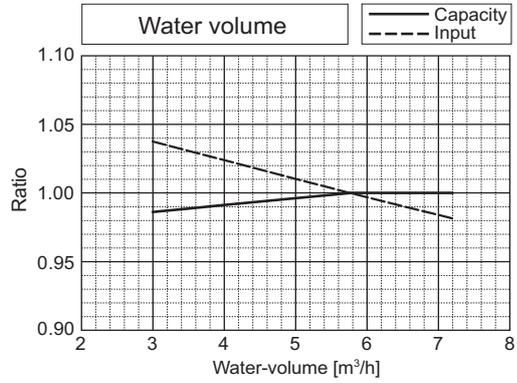
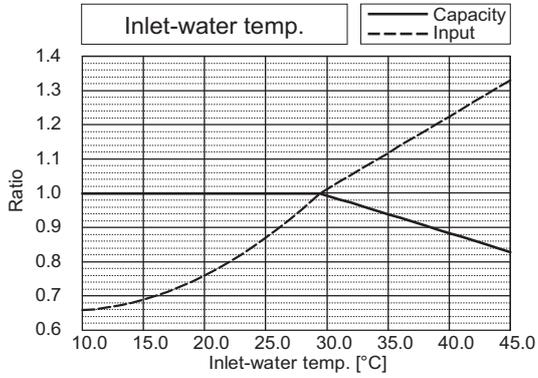
• Heating



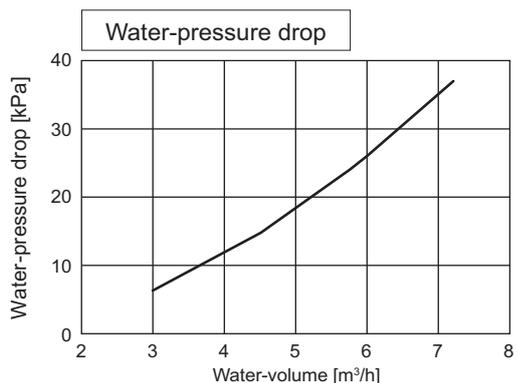
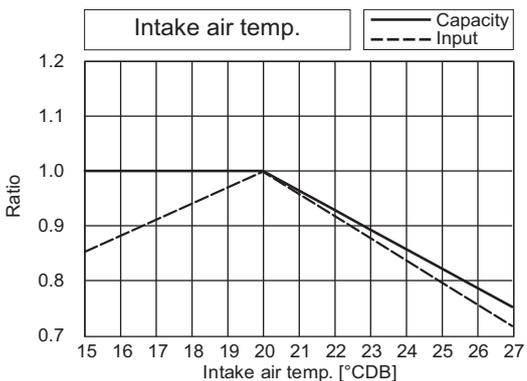
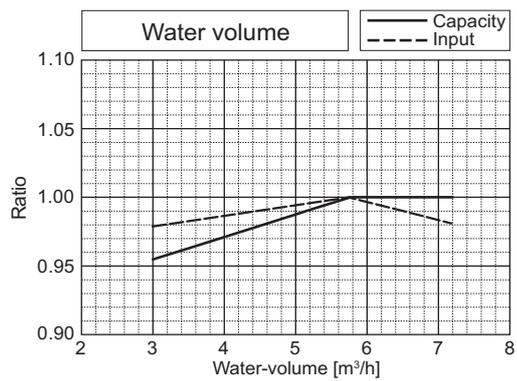
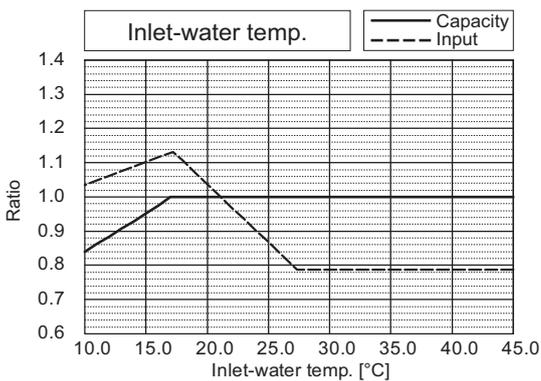
7-1. Correction by temperature

CITY MULTI could have varied capacity at different designing temperature. Using the nominal cooling/heating capacity value and the ratio below, the capacity can be observed at various temperature.

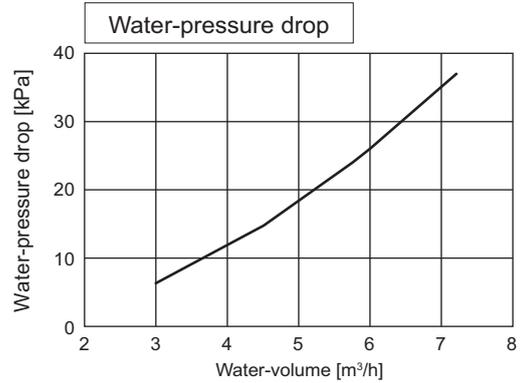
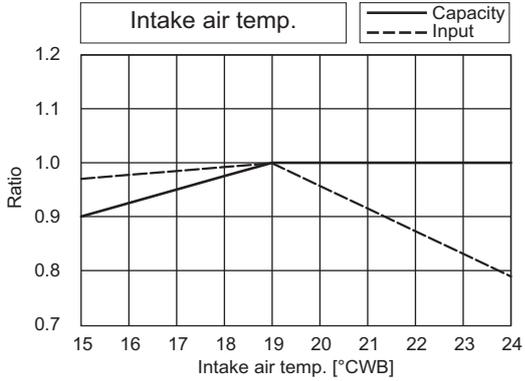
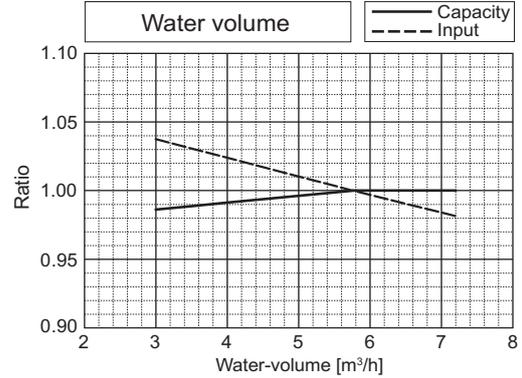
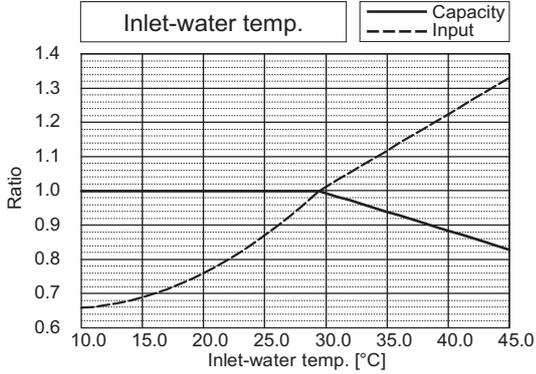
PQHY-			P72ZLMU		
Nominal Cooling Capacity	kW	21.1	Rated Cooling Capacity	kW	20.2
	BTU/h	72,000		BTU/h	69,000
Input	kW	3.23	Input	kW	(Non-Ducted) 2.96 (Ducted) 3.12



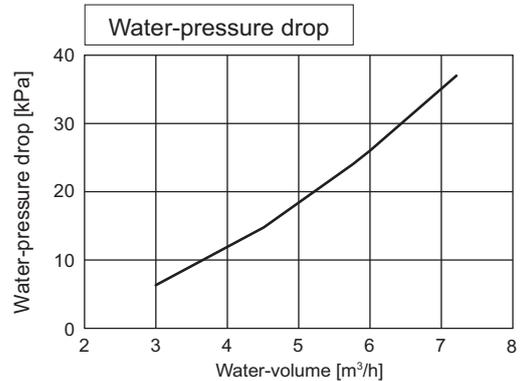
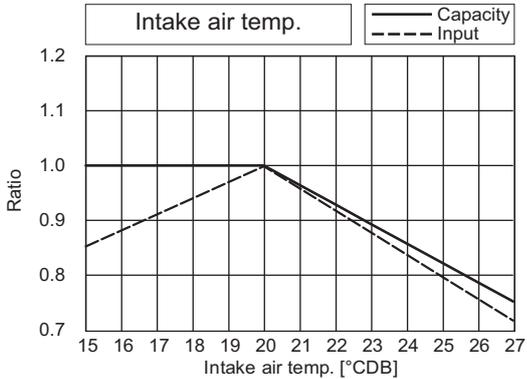
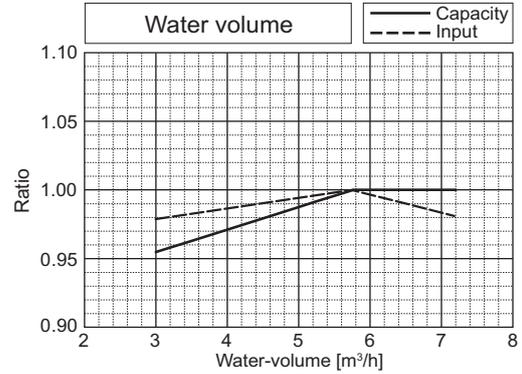
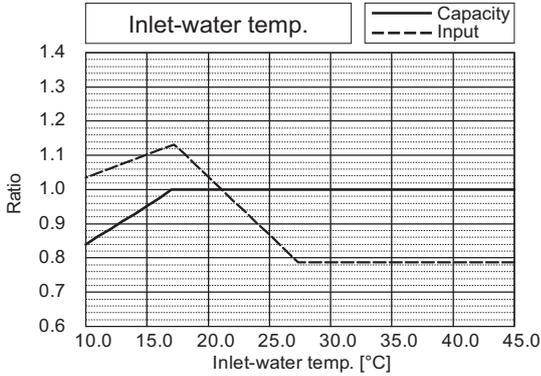
PQHY-			P72ZLMU		
Nominal Heating Capacity	kW	23.4	Rated Heating Capacity	kW	22.3
	BTU/h	80,000		BTU/h	76,000
Input	kW	3.63	Input	kW	(Non-Ducted) 3.34 (Ducted) 3.36



PQHY-		P96ZLMU			
Nominal Cooling Capacity	kW	28.1	Rated Cooling Capacity	kW	27.0
	BTU/h	96,000		BTU/h	92,000
Input	kW	4.65	Input	kW	(Non-Ducted) 4.26 (Ducted) 5.19



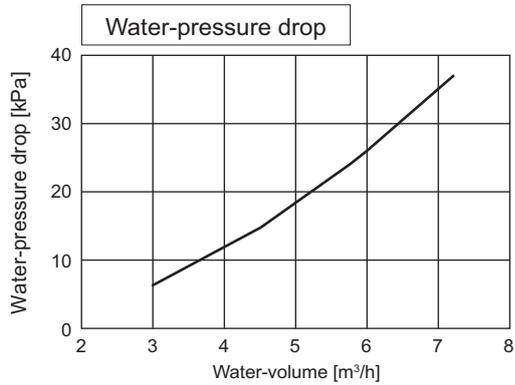
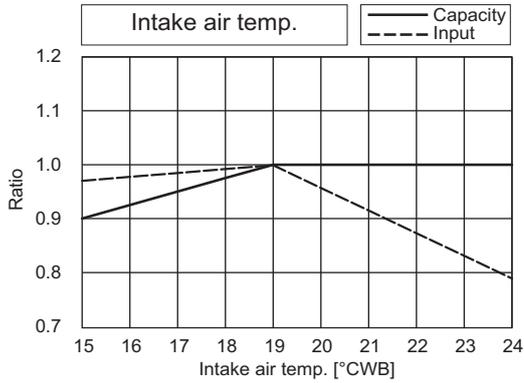
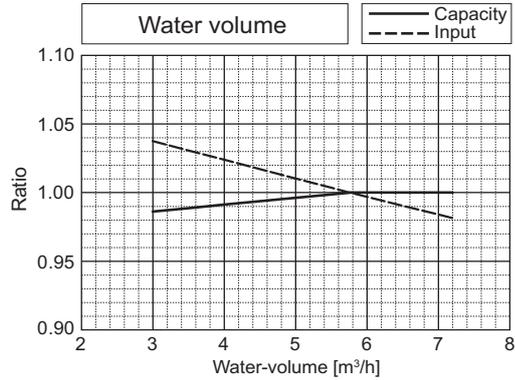
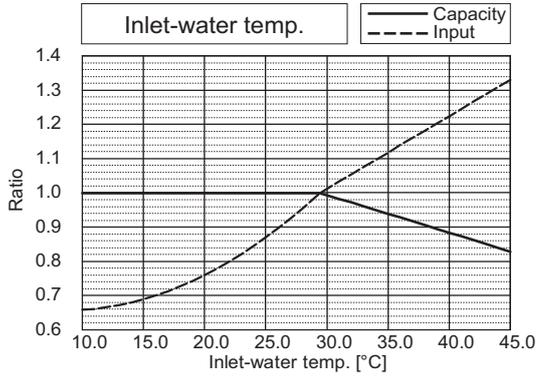
PQHY-		P96ZLMU			
Nominal Heating Capacity	kW	31.7	Rated Heating Capacity	kW	30.2
	BTU/h	108,000		BTU/h	103,000
Input	kW	5.05	Input	kW	(Non-Ducted) 4.65 (Ducted) 4.48



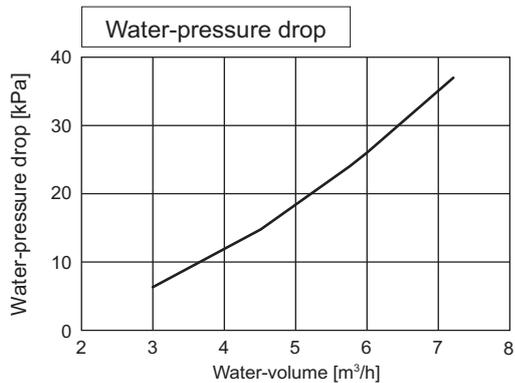
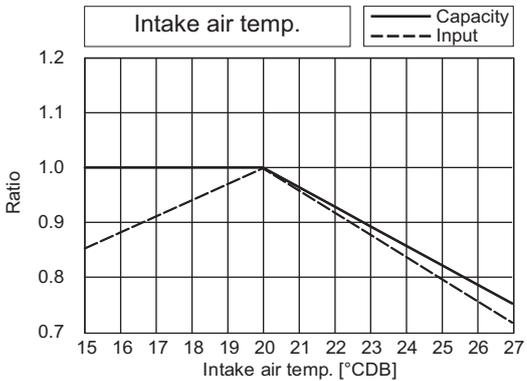
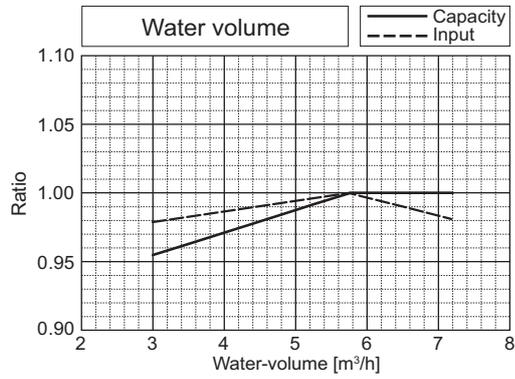
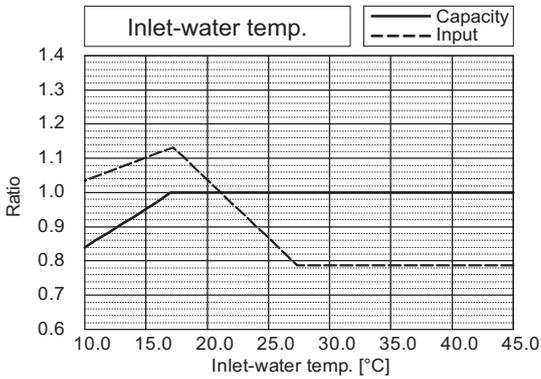
7. CAPACITY TABLES

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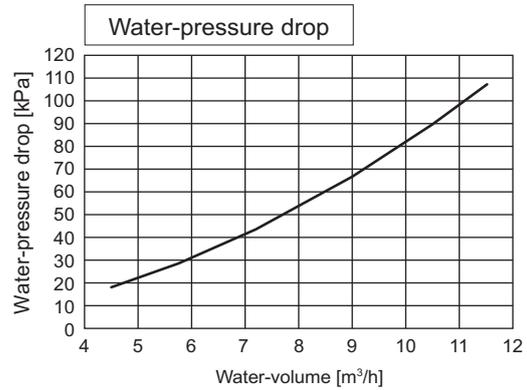
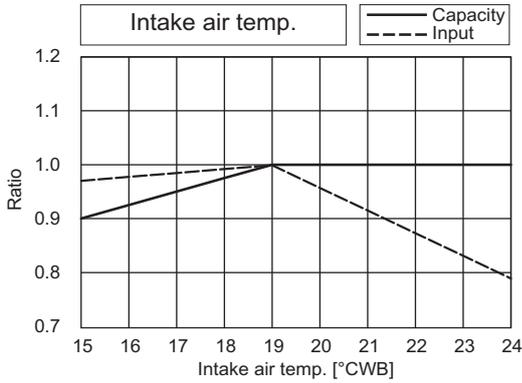
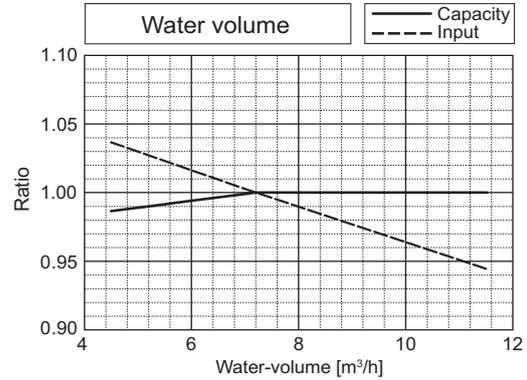
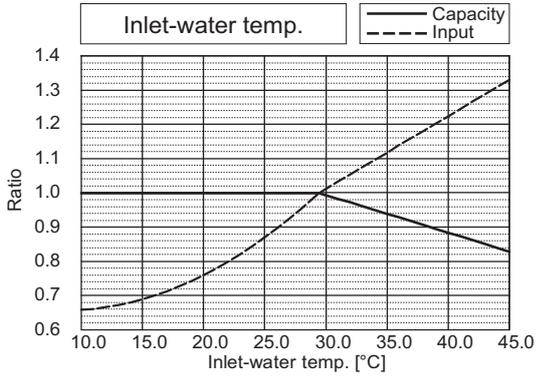
PQHY-			P120ZLMU		
Nominal Cooling Capacity	kW	35.2	Rated Cooling Capacity	kW	33.4
	BTU/h	120,000		BTU/h	114,000
Input	kW	7.24	Input	kW	(Non-Ducted) 6.66 (Ducted) 7.35



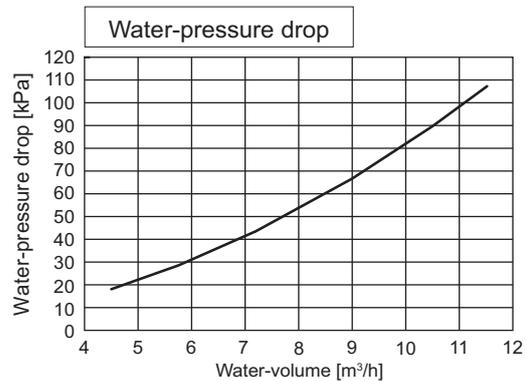
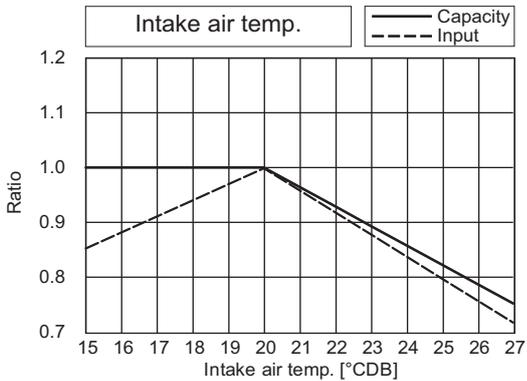
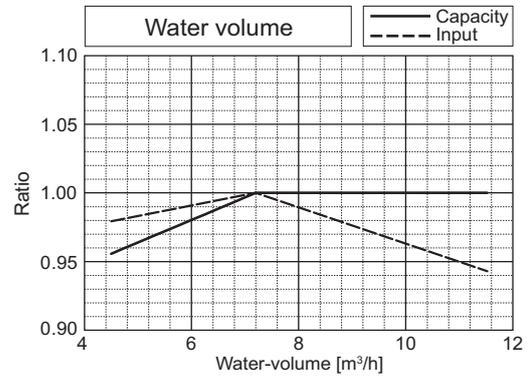
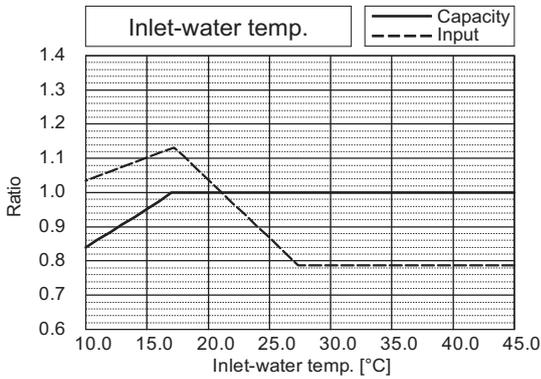
PQHY-			P120ZLMU		
Nominal Heating Capacity	kW	39.6	Rated Heating Capacity	kW	37.8
	BTU/h	135,000		BTU/h	129,000
Input	kW	6.83	Input	kW	(Non-Ducted) 6.29 (Ducted) 5.92



PQHY-			P144ZLMU		
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	8.78	Input	kW	(Non-Ducted) 8.07 (Ducted) 9.98



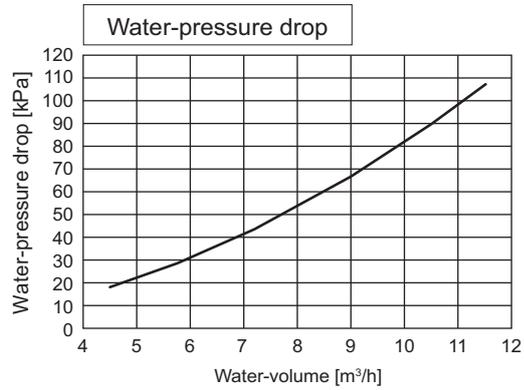
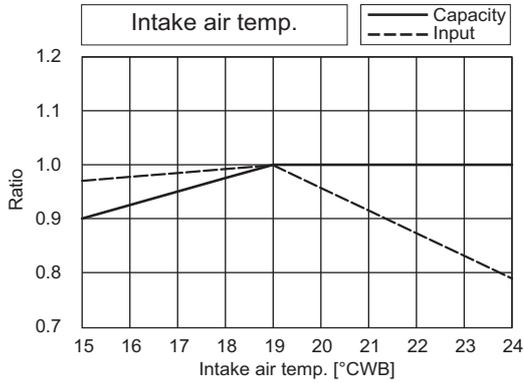
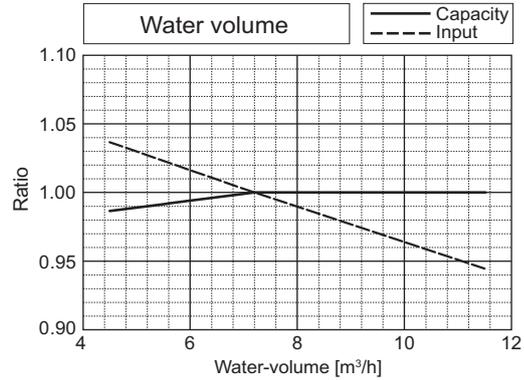
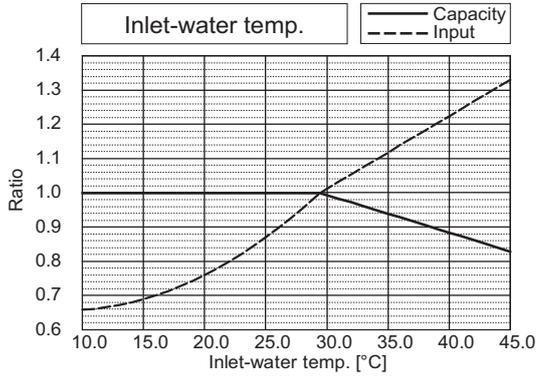
PQHY-			P144ZLMU		
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	8.11	Input	kW	(Non-Ducted) 7.47 (Ducted) 7.90



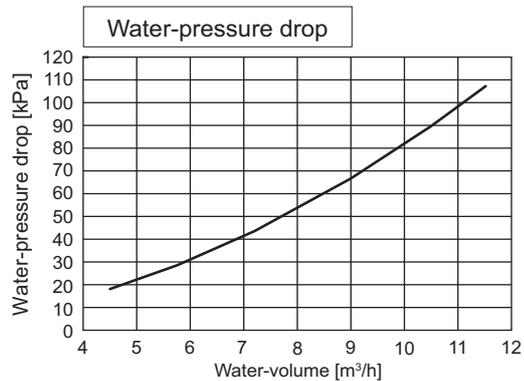
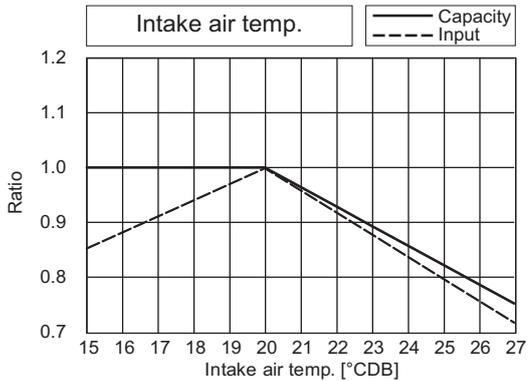
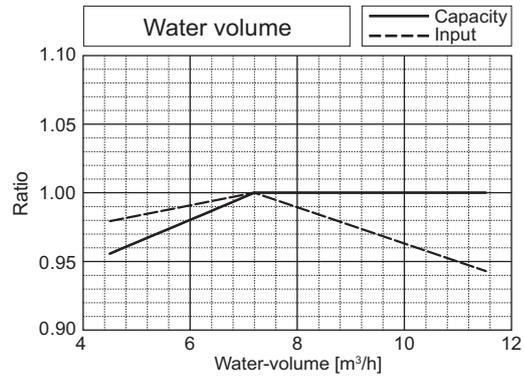
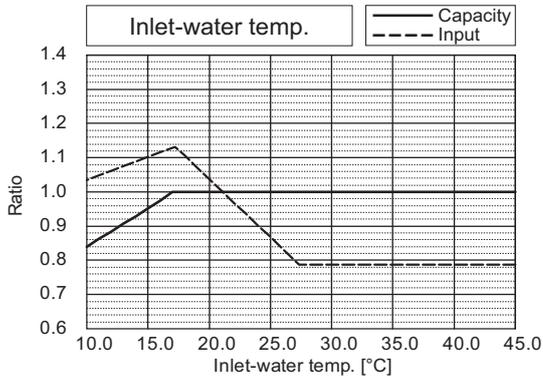
7. CAPACITY TABLES

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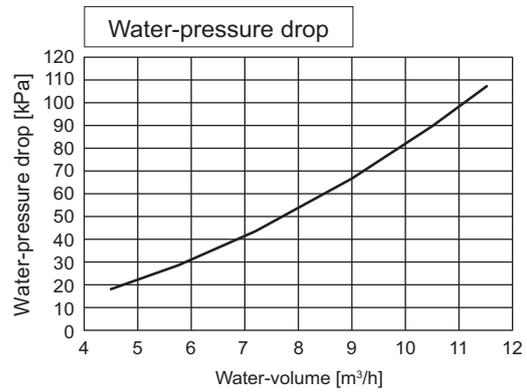
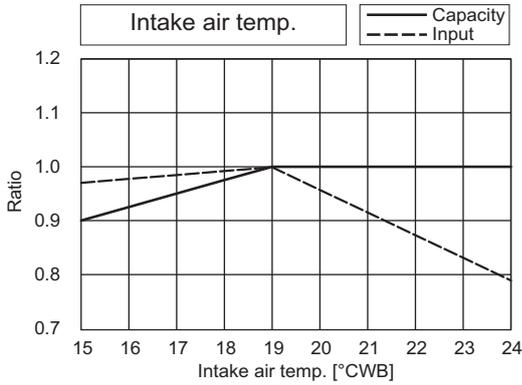
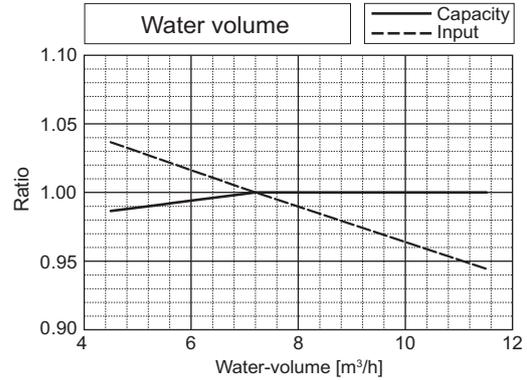
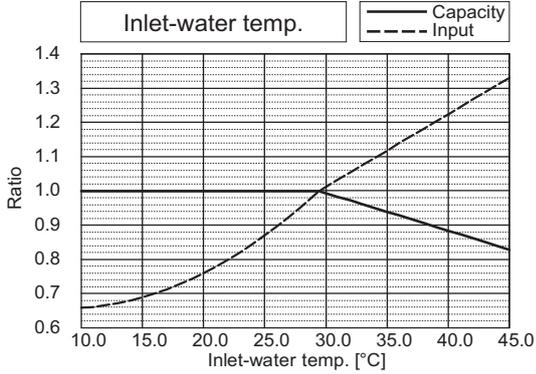
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Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	12.05	Input	kW	(Non-Ducted) 11.10 (Ducted) 11.88



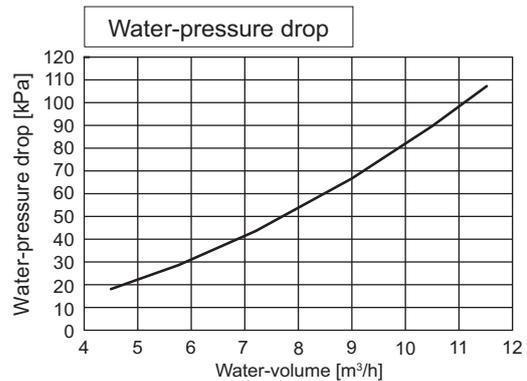
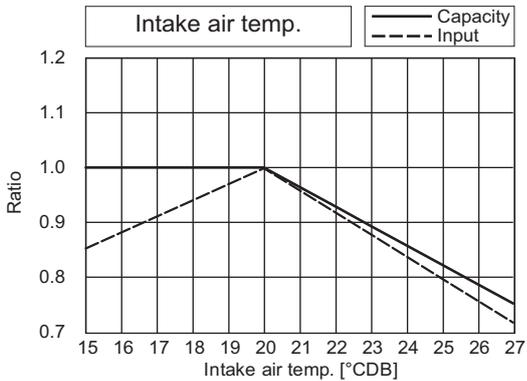
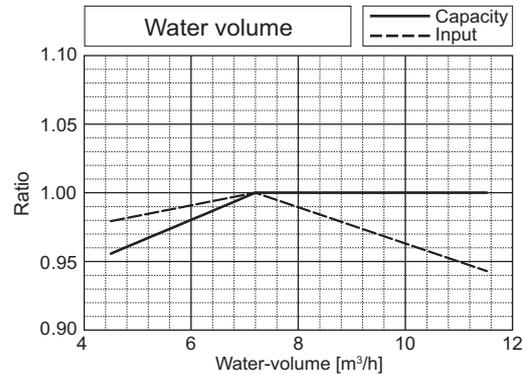
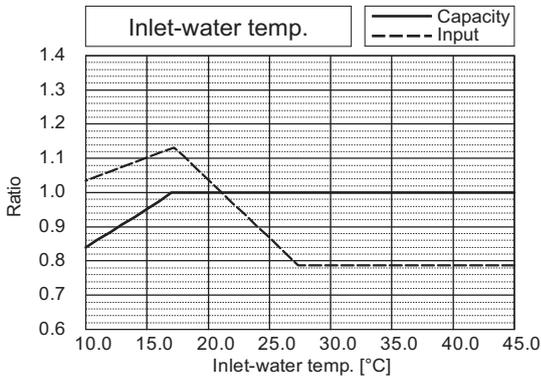
PQHY-			P168ZLMU		
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.86	Input	kW	(Non-Ducted) 9.09 (Ducted) 9.72



PQHY-			P192ZLMU		
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	15.05	Input	kW	(Non-Ducted) 13.87 (Ducted) 14.19



PQHY-			P192ZLMU		
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.90	Input	kW	(Non-Ducted) 10.97 (Ducted) 11.56



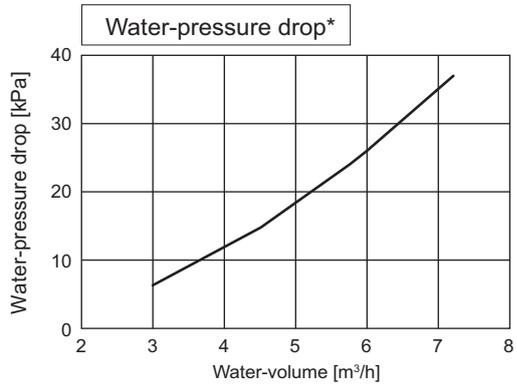
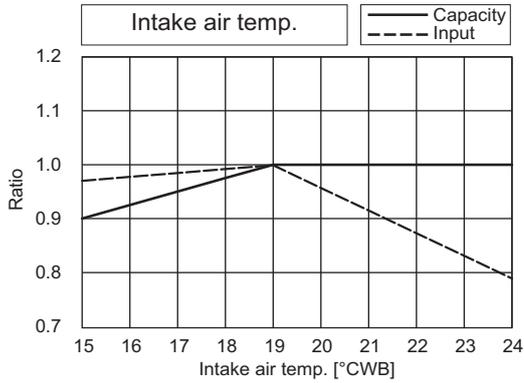
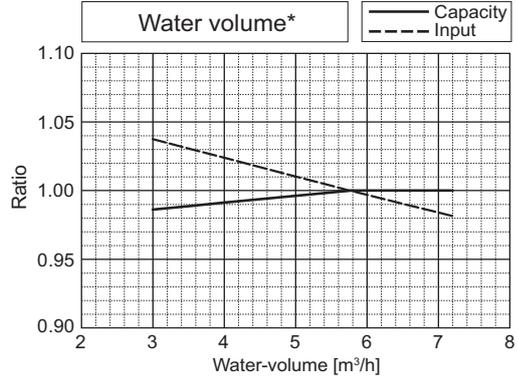
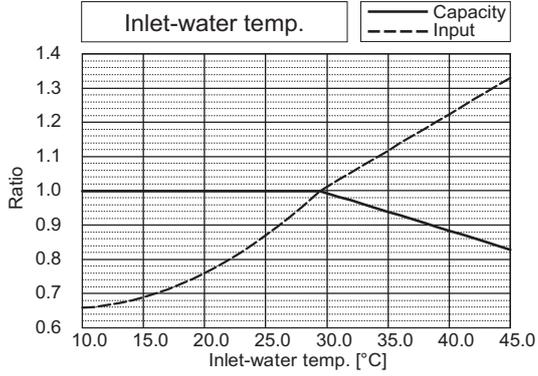
7. CAPACITY TABLES

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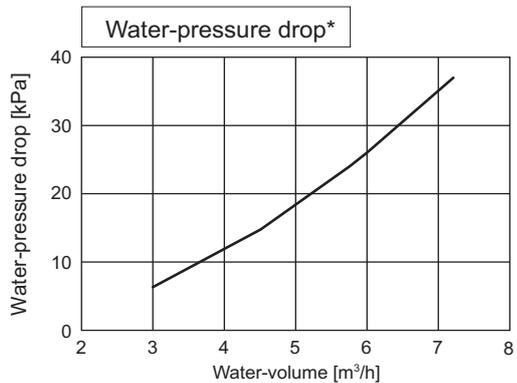
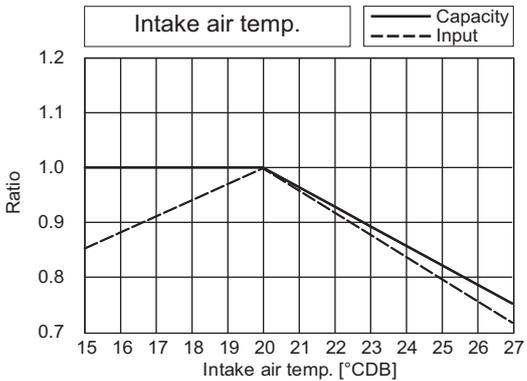
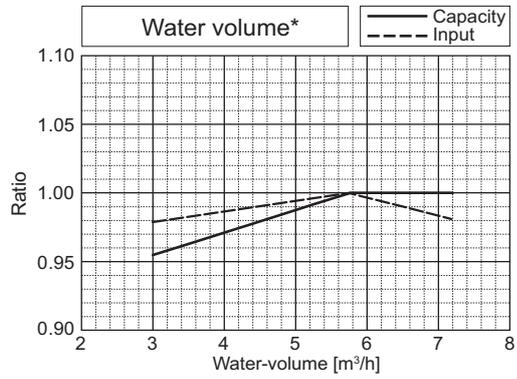
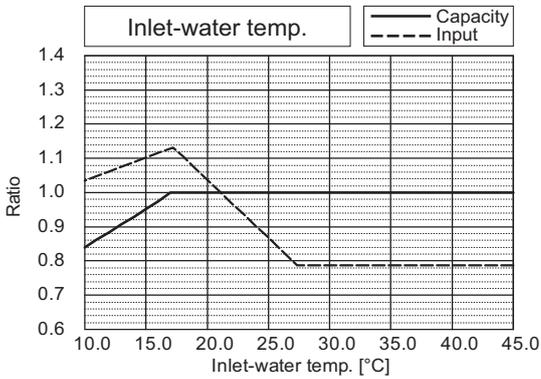
WY 575V

PQHY-		P144ZSLMU			
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	7.11	Input	kW	(Non-Ducted) 6.53 (Ducted) 7.72

*The drawing indicates characteristic per unit.

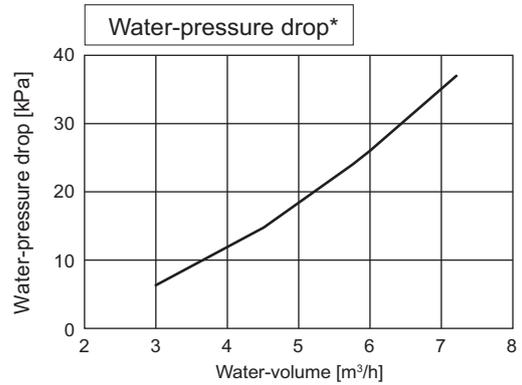
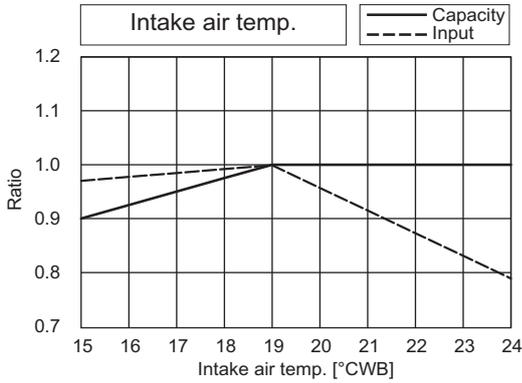
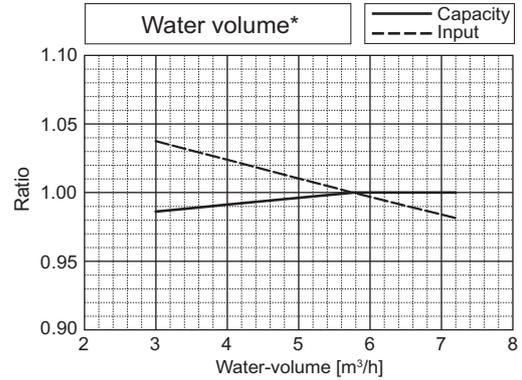
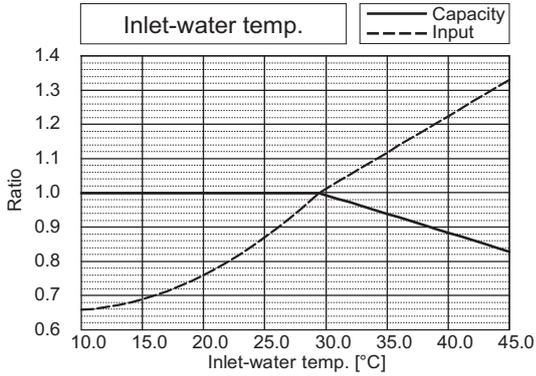


PQHY-		P144ZSLMU			
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	7.45	Input	kW	(Non-Ducted) 6.86 (Ducted) 7.22

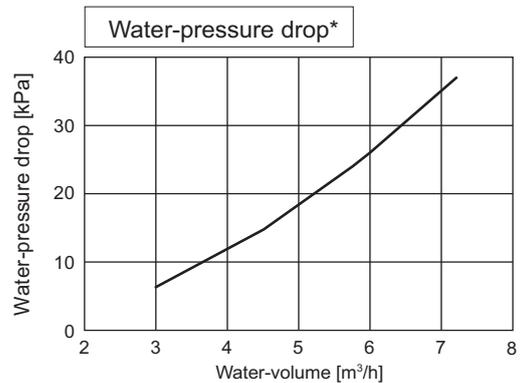
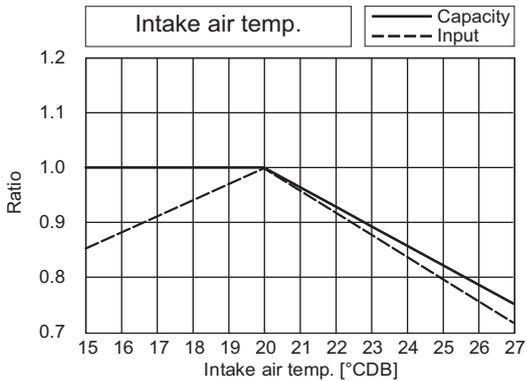
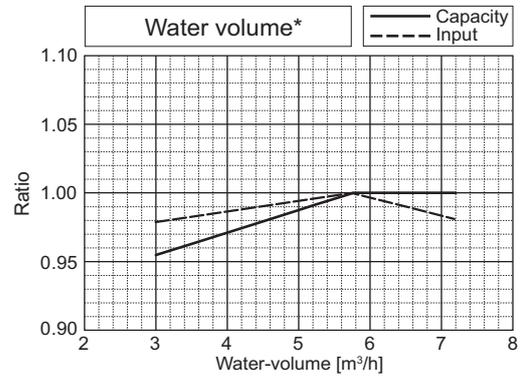
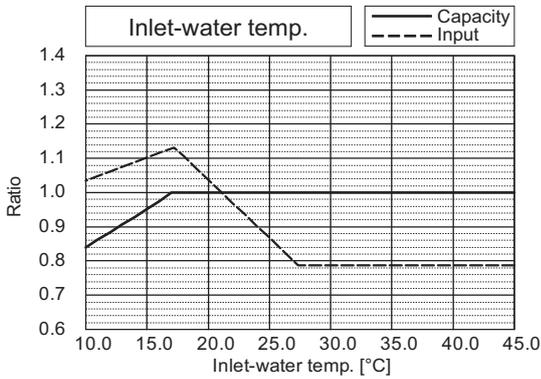


*The drawing indicates characteristic per unit.

PQHY-		P168ZSLMU			
Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	9.33	Input	kW	(Non-Ducted) 8.58 (Ducted) 9.22



PQHY-		P168ZSLMU			
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.34	Input	kW	(Non-Ducted) 8.60 (Ducted) 8.03

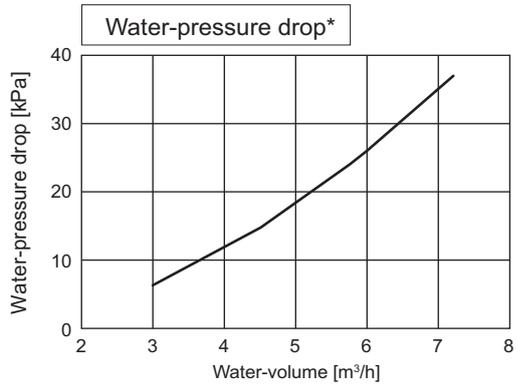
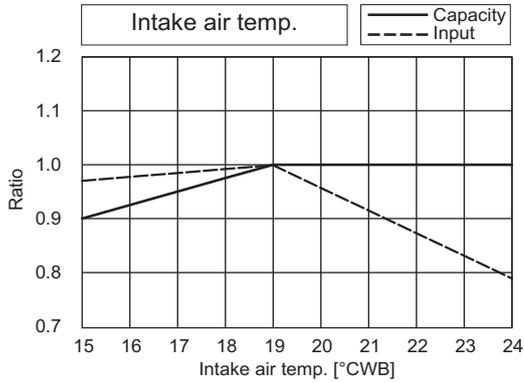
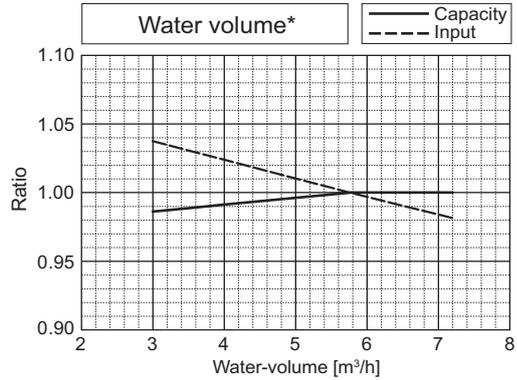
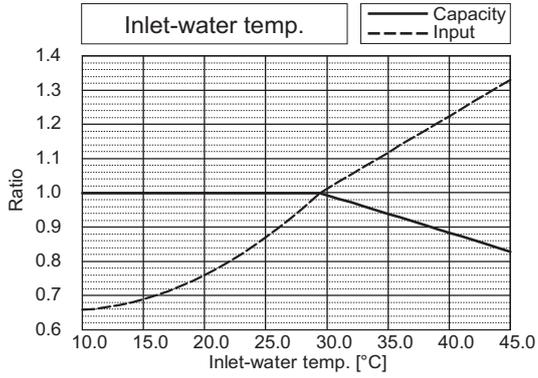


7. CAPACITY TABLES

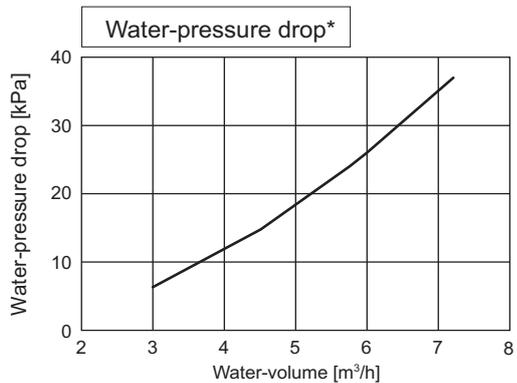
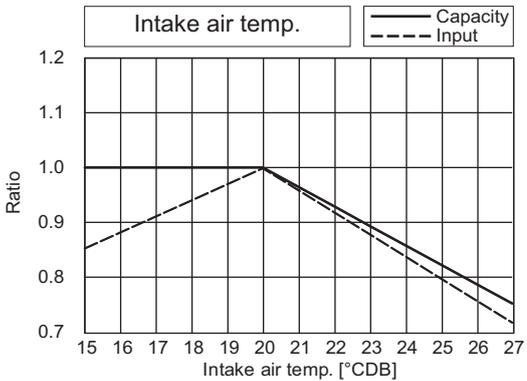
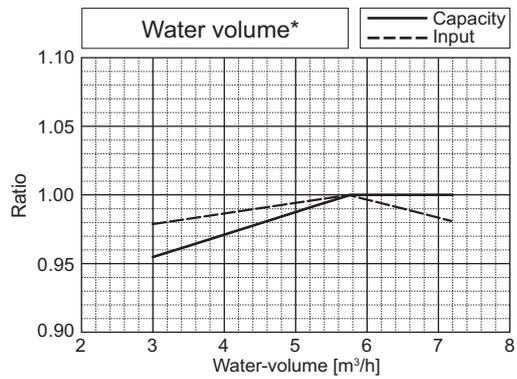
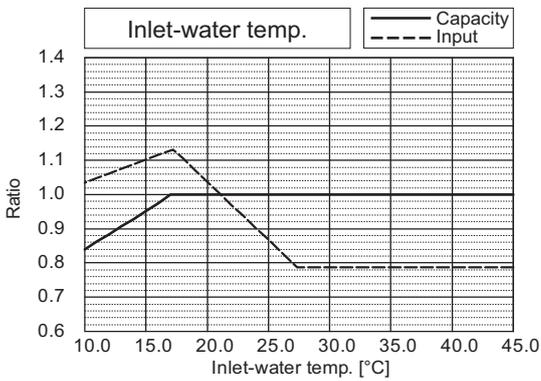
WY 575V

PQHY-		P192ZSLMU			
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	11.30	Input	kW	(Non-Ducted) 10.40 (Ducted) 10.98

*The drawing indicates characteristic per unit.

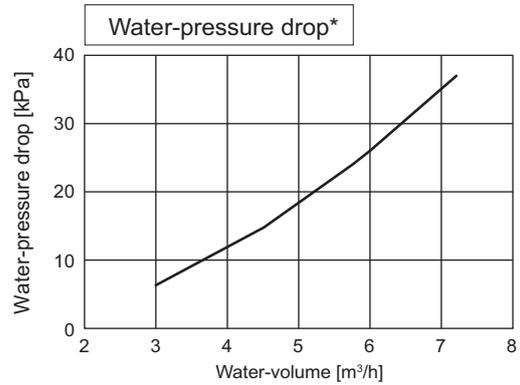
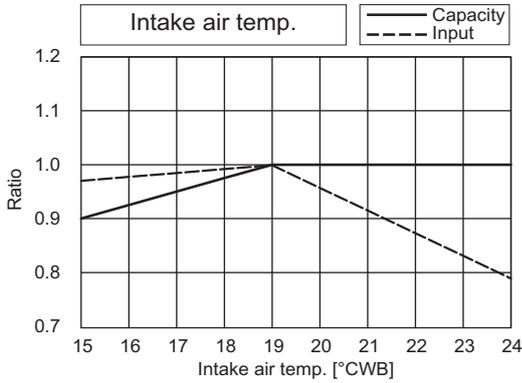
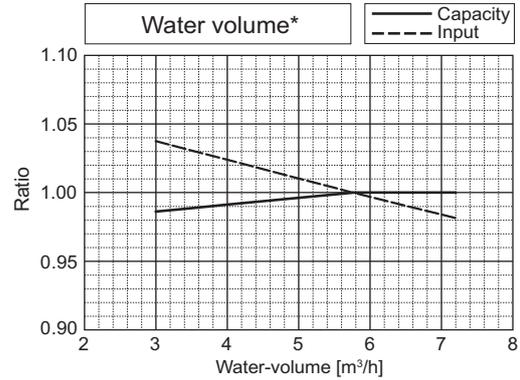
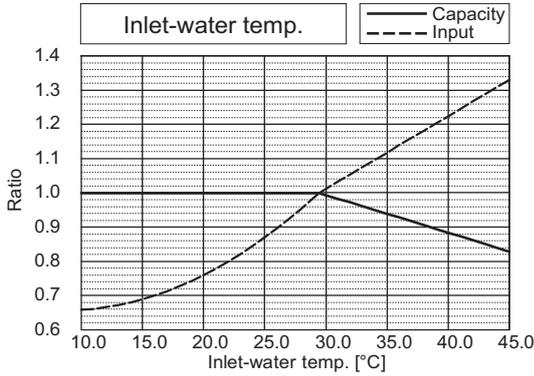


PQHY-		P192ZSLMU			
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.02	Input	kW	(Non-Ducted) 10.16 (Ducted) 8.90

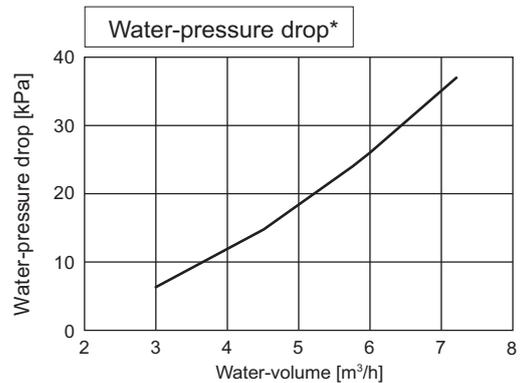
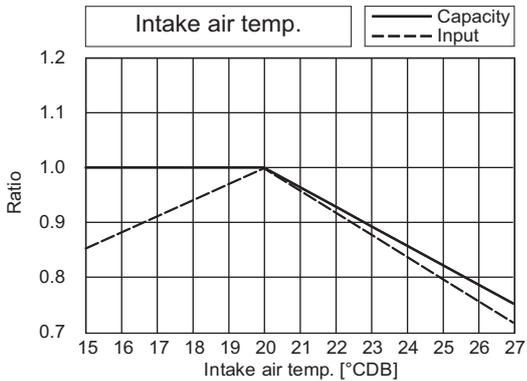
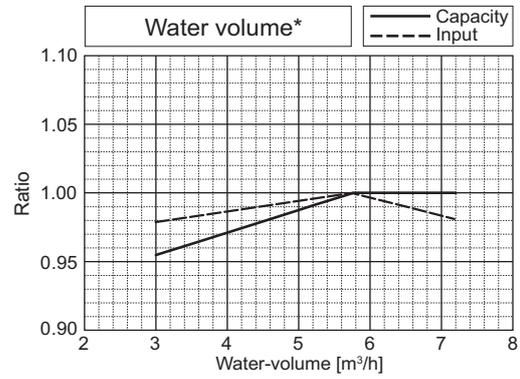
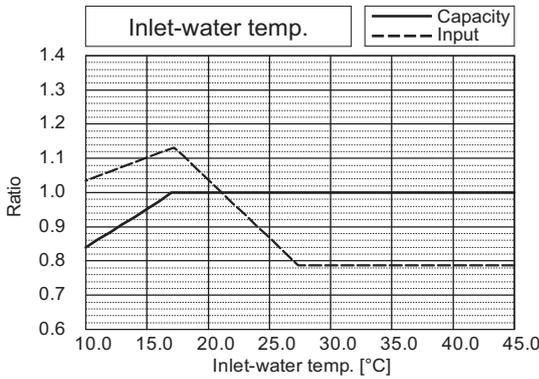


PQHY-			P216ZSLMU		
Nominal Cooling Capacity	kW	63.3	Rated Cooling Capacity	kW	60.4
	BTU/h	216,000		BTU/h	206,000
Input	kW	14.03	Input	kW	(Non-Ducted) 12.93 (Ducted) 13.24

*The drawing indicates characteristic per unit.



PQHY-			P216ZSLMU		
Nominal Heating Capacity	kW	71.2	Rated Heating Capacity	kW	68.0
	BTU/h	243,000		BTU/h	232,000
Input	kW	12.88	Input	kW	(Non-Ducted) 11.88 (Ducted) 10.35

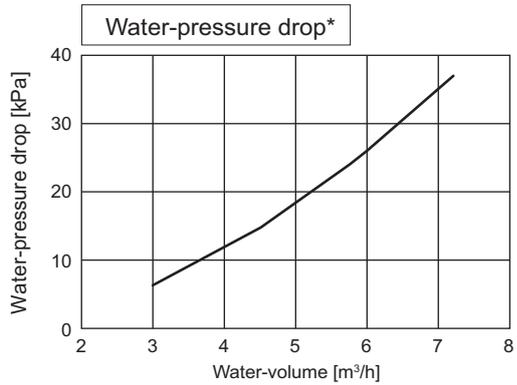
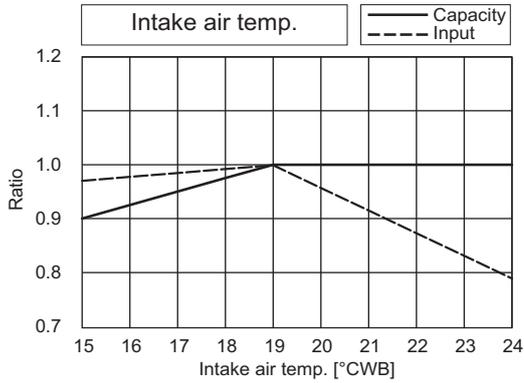
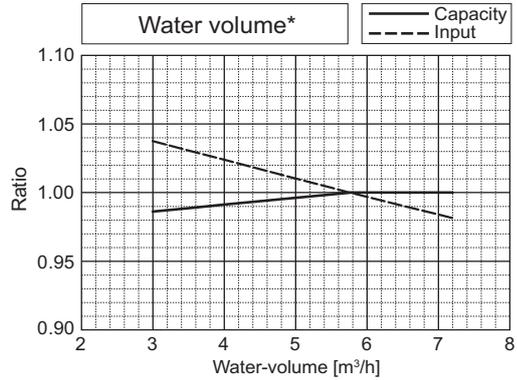
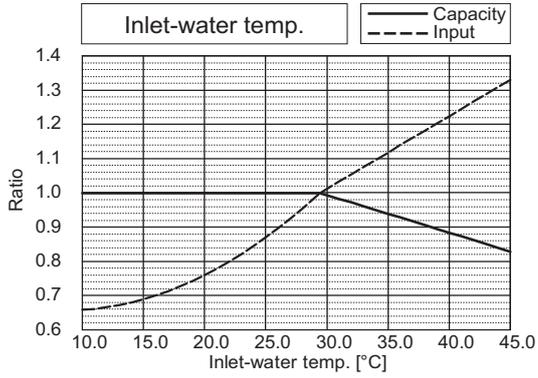


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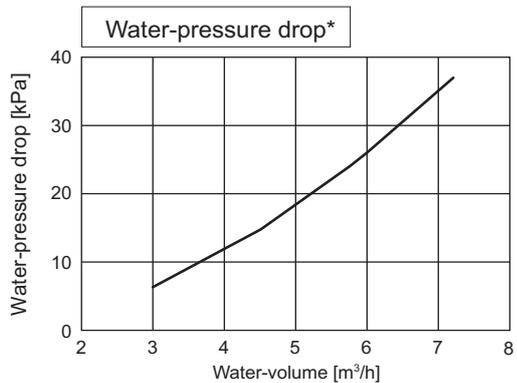
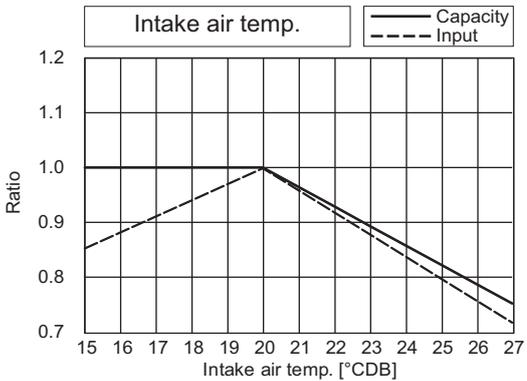
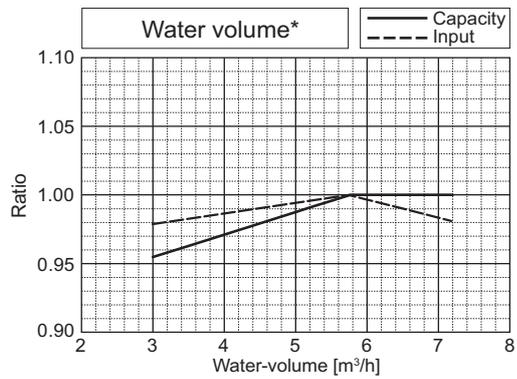
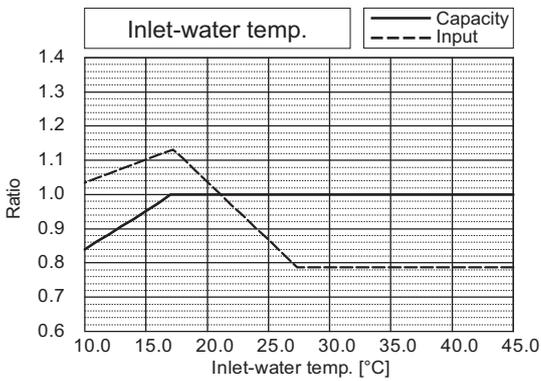
WY 575V

PQHY-		P240ZSLMU			
Nominal Cooling Capacity	kW	70.3	Rated Cooling Capacity	kW	66.8
	BTU/h	240,000		BTU/h	228,000
Input	kW	16.89	Input	kW	(Non-Ducted) 15.57 (Ducted) 16.15

*The drawing indicates characteristic per unit.

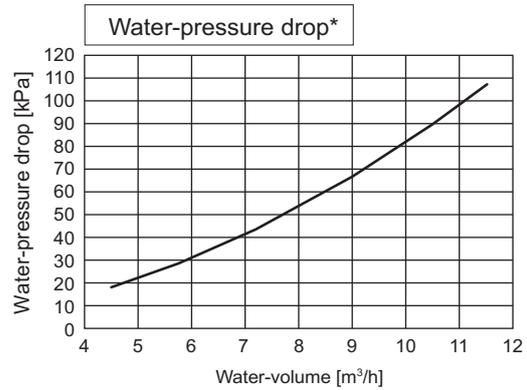
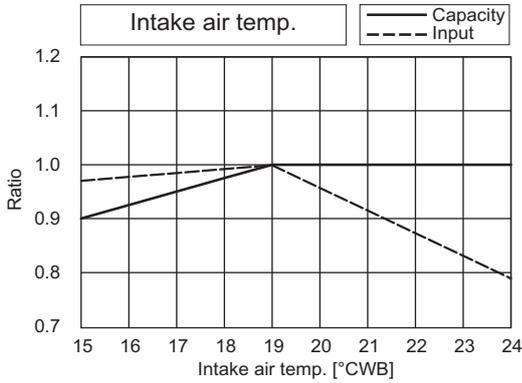
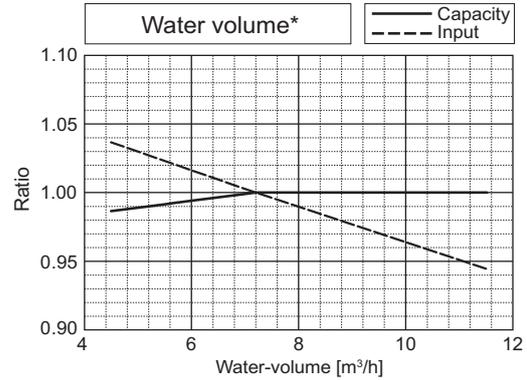
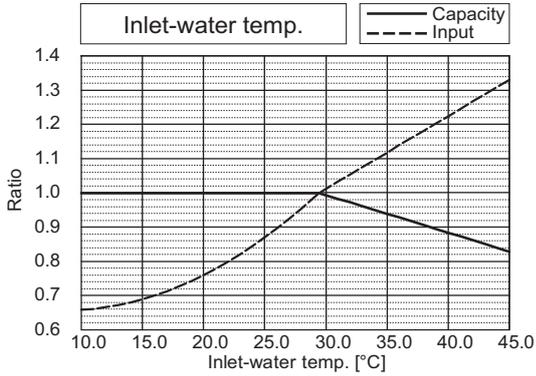


PQHY-		P240ZSLMU			
Nominal Heating Capacity	kW	79.1	Rated Heating Capacity	kW	75.6
	BTU/h	270,000		BTU/h	258,000
Input	kW	14.58	Input	kW	(Non-Ducted) 13.45 (Ducted) 12.02

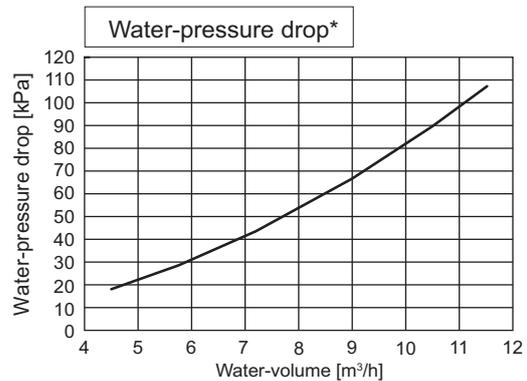
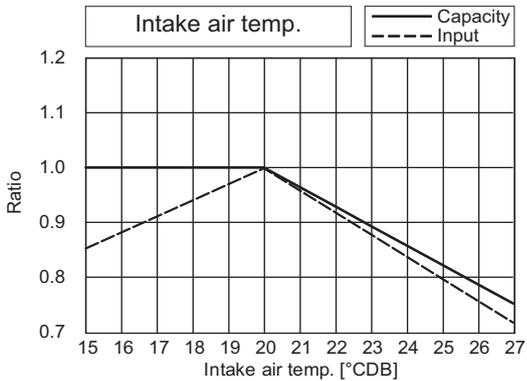
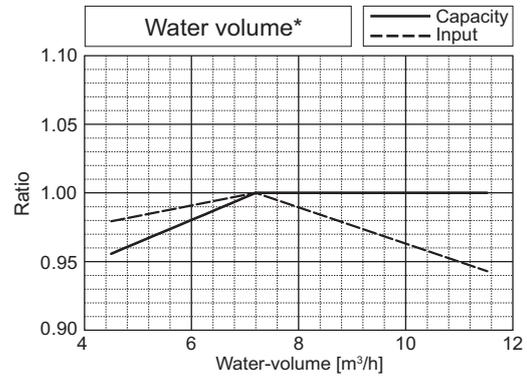
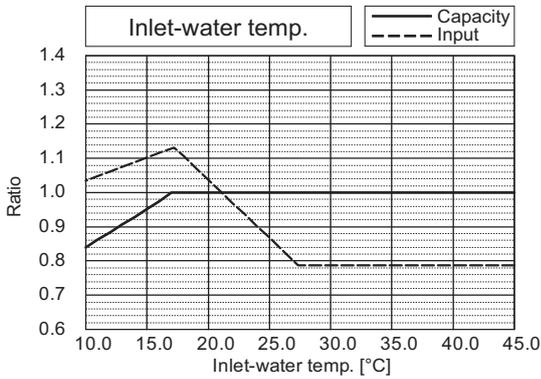


PQHY-		P288ZSLMU			
Nominal Cooling Capacity	kW	84.4	Rated Cooling Capacity	kW	80.6
	BTU/h	288,000		BTU/h	275,000
Input	kW	20.42	Input	kW	(Non-Ducted) 18.82 (Ducted) 21.43

*The drawing indicates characteristic per unit.



PQHY-		P288ZSLMU			
Nominal Heating Capacity	kW	94.7	Rated Heating Capacity	kW	90.3
	BTU/h	323,000		BTU/h	308,000
Input	kW	17.50	Input	kW	(Non-Ducted) 16.13 (Ducted) 16.05



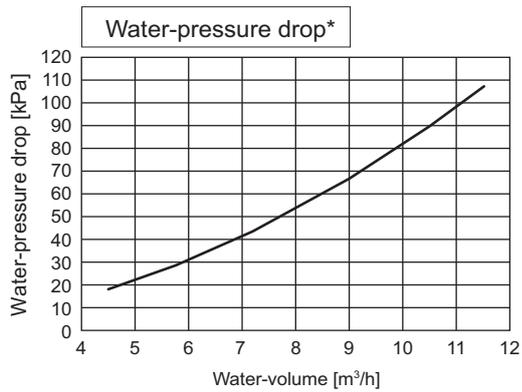
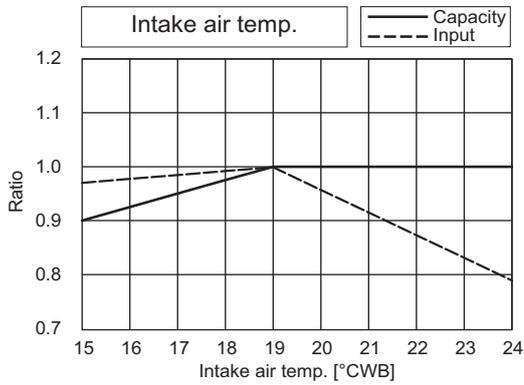
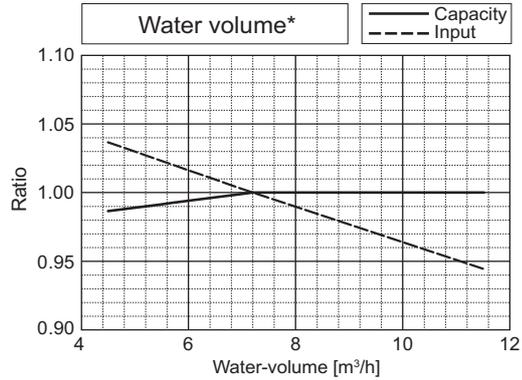
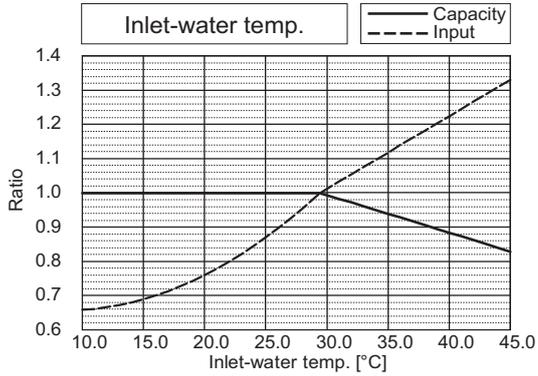
7. CAPACITY TABLES

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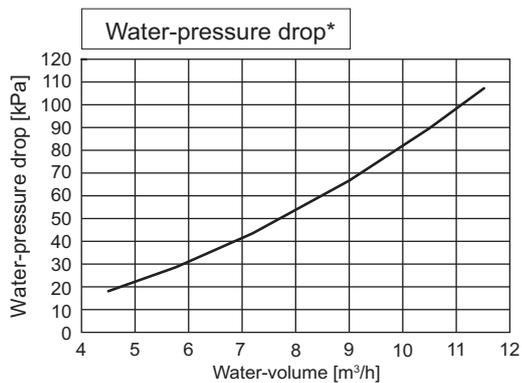
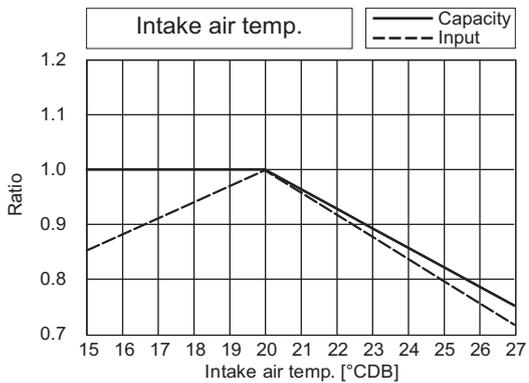
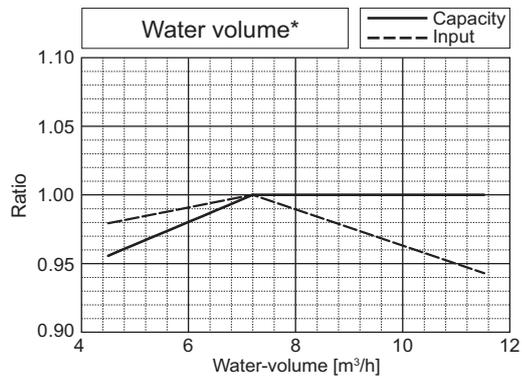
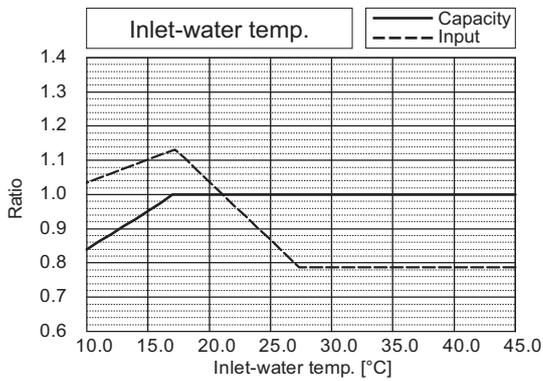
WY 575V

PQHY-		P312ZSLMU			
Nominal Cooling Capacity	kW	91.4	Rated Cooling Capacity	kW	87.0
	BTU/h	312,000		BTU/h	297,000
Input	kW	23.41	Input	kW	(Non-Ducted) 21.59 (Ducted) 23.67

*The drawing indicates characteristic per unit.

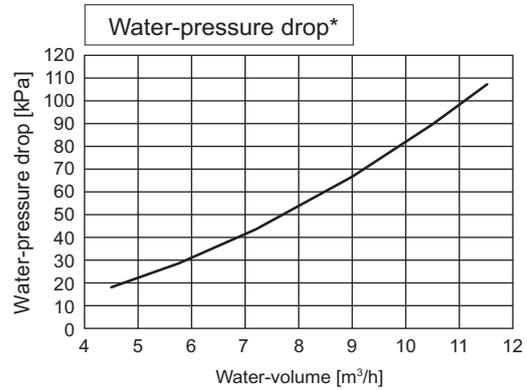
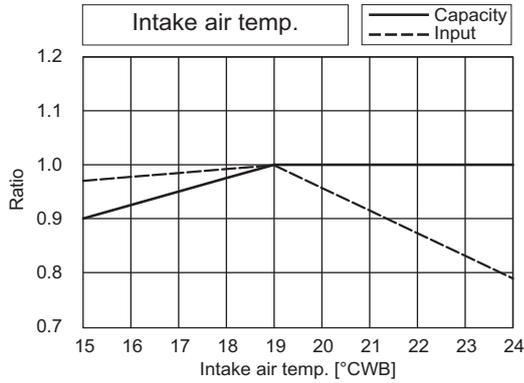
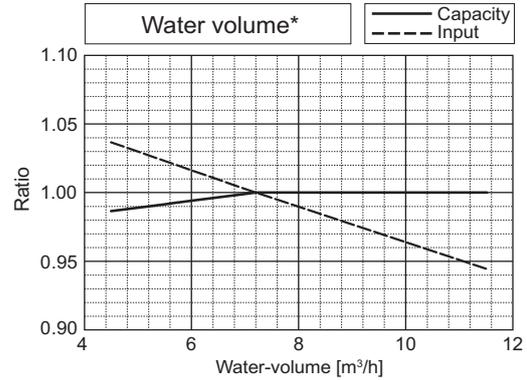
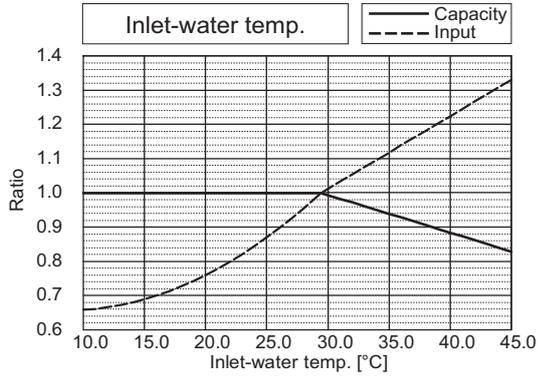


PQHY-		P312ZSLMU			
Nominal Heating Capacity	kW	102.6	Rated Heating Capacity	kW	97.9
	BTU/h	350,000		BTU/h	334,000
Input	kW	19.11	Input	kW	(Non-Ducted) 17.62 (Ducted) 17.96

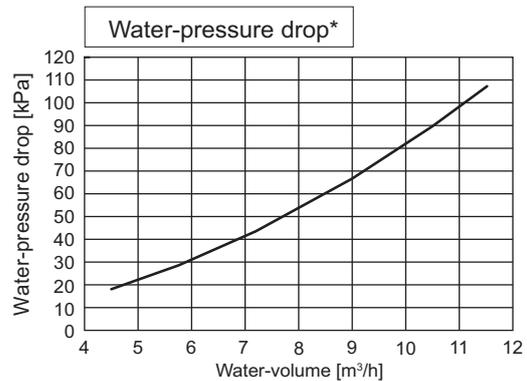
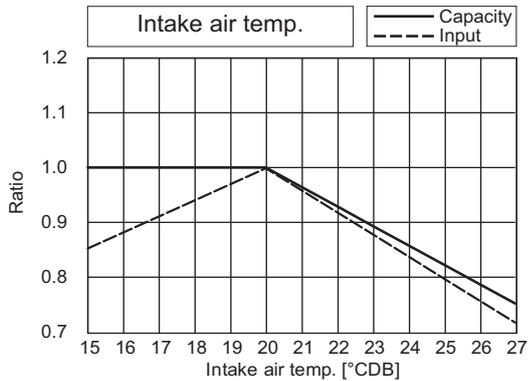
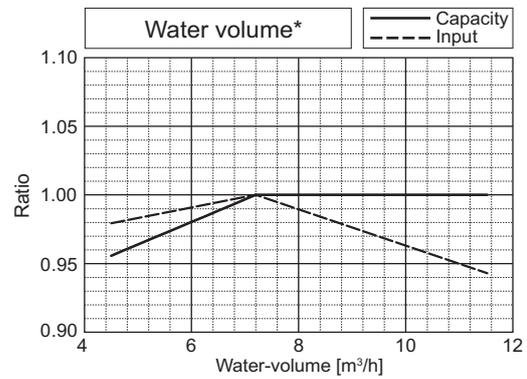
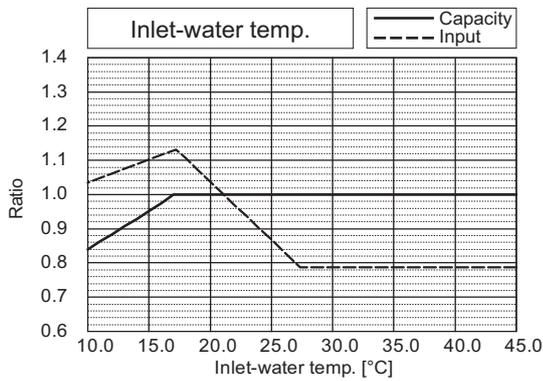


PQHY-			P336ZSLMU		
Nominal Cooling Capacity	kW	98.5	Rated Cooling Capacity	kW	93.8
	BTU/h	336,000		BTU/h	320,000
Input	kW	26.84	Input	kW	(Non-Ducted) 24.76 (Ducted) 25.85

*The drawing indicates characteristic per unit.



PQHY-			P336ZSLMU		
Nominal Heating Capacity	kW	110.8	Rated Heating Capacity	kW	105.8
	BTU/h	378,000		BTU/h	361,000
Input	kW	20.77	Input	kW	(Non-Ducted) 19.16 (Ducted) 20.05



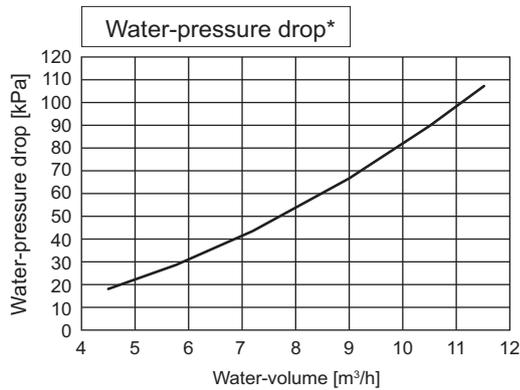
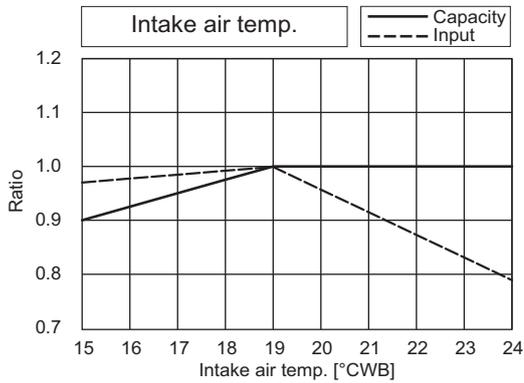
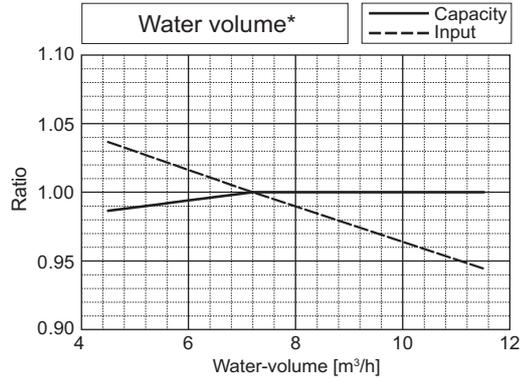
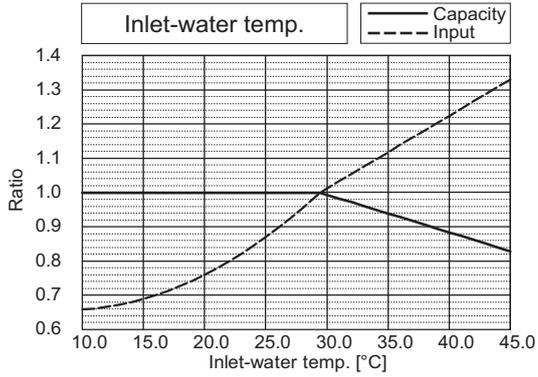
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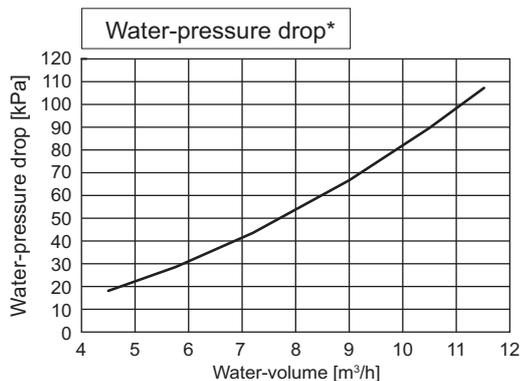
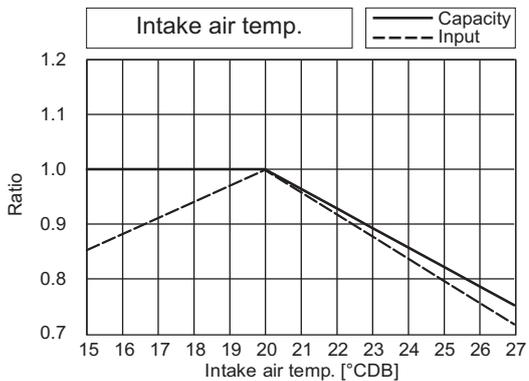
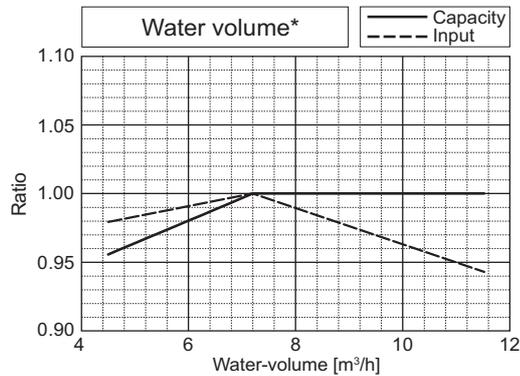
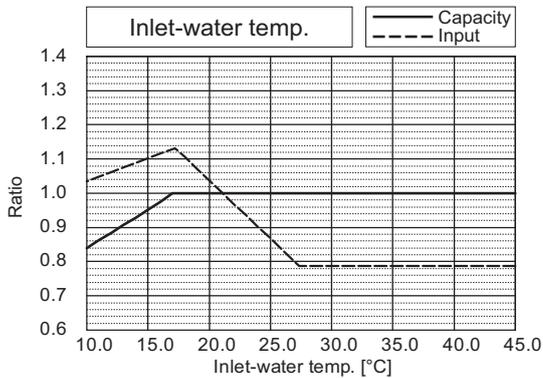
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PQHY-			P360ZSLMU		
Nominal Cooling Capacity	kW	105.5	Rated Cooling Capacity	kW	100.2
	BTU/h	360,000		BTU/h	342,000
Input	kW	29.43	Input	kW	(Non-Ducted) 27.17 (Ducted) 27.41

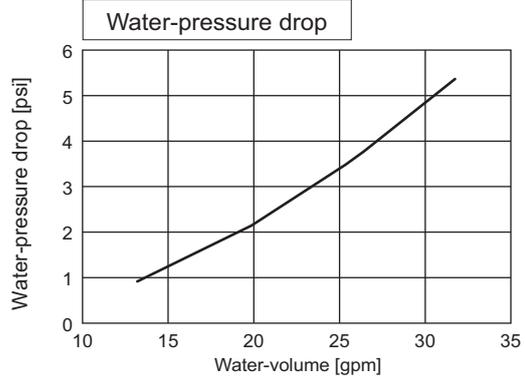
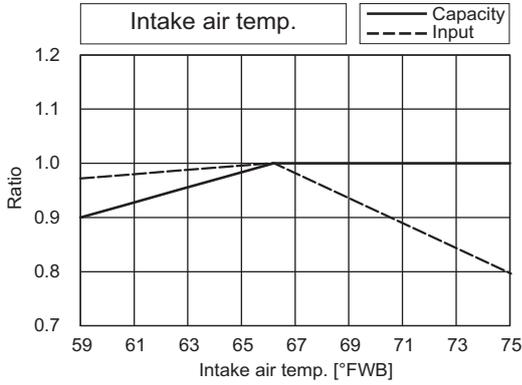
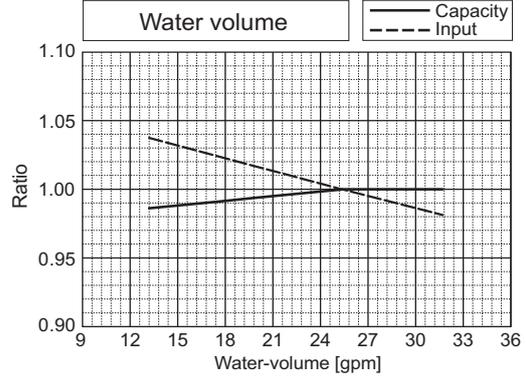
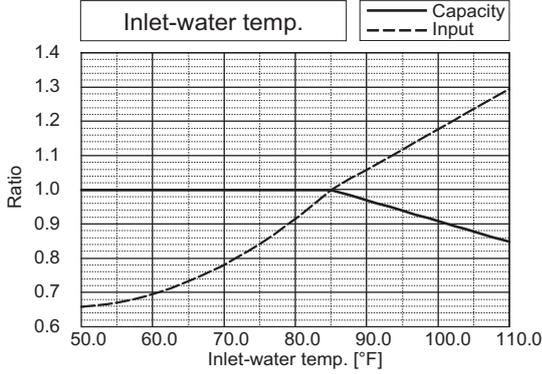
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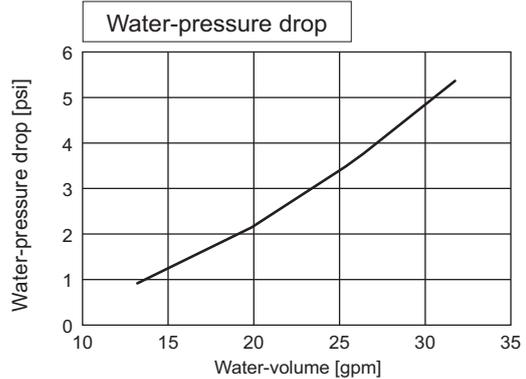
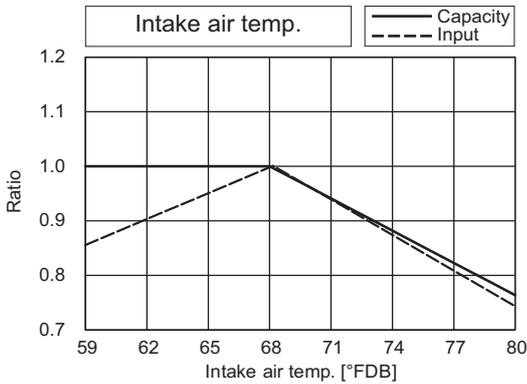
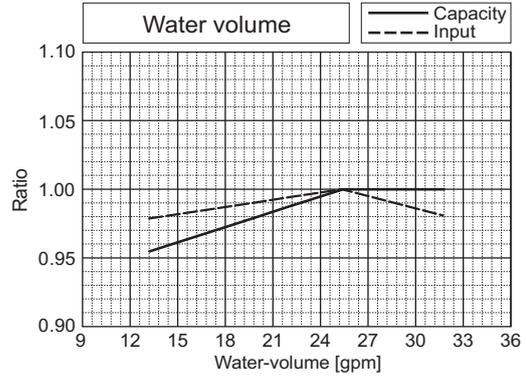
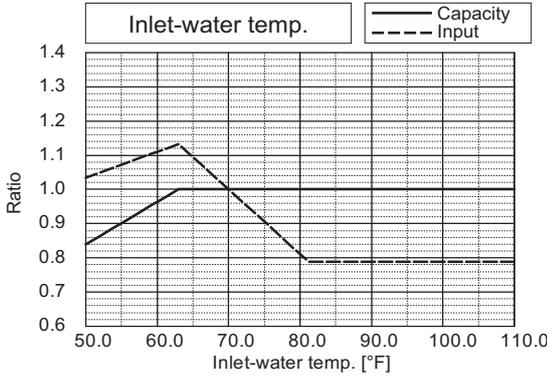
PQHY-			P360ZSLMU		
Nominal Heating Capacity	kW	118.7	Rated Heating Capacity	kW	113.4
	BTU/h	405,000		BTU/h	387,000
Input	kW	22.85	Input	kW	(Non-Ducted) 21.09 (Ducted) 21.70



PQHY-		P72ZLMU			
Nominal Cooling Capacity	kW	21.1	Rated Cooling Capacity	kW	20.2
	BTU/h	72,000		BTU/h	69,000
Input	kW	3.23	Input	kW	(Non-Ducted) 2.96 (Ducted) 3.12



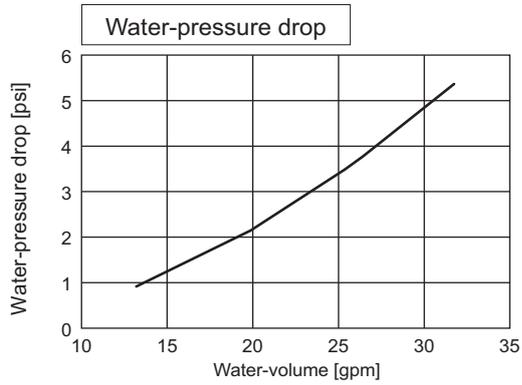
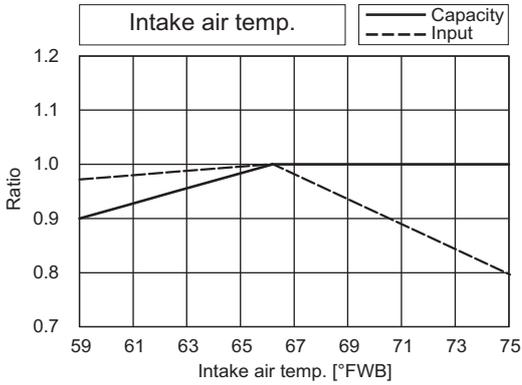
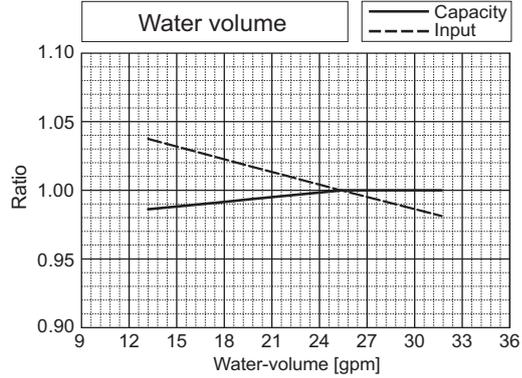
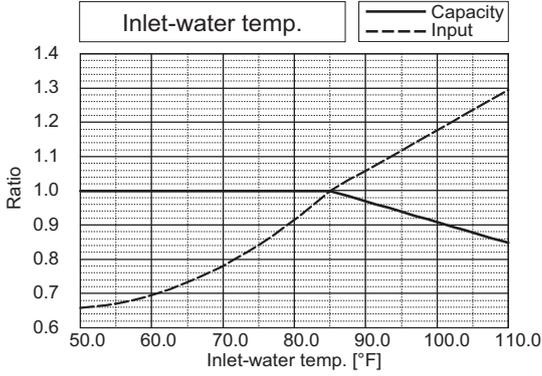
PQHY-		P72ZLMU			
Nominal Heating Capacity	kW	23.4	Rated Heating Capacity	kW	22.3
	BTU/h	80,000		BTU/h	76,000
Input	kW	3.63	Input	kW	(Non-Ducted) 3.34 (Ducted) 3.36



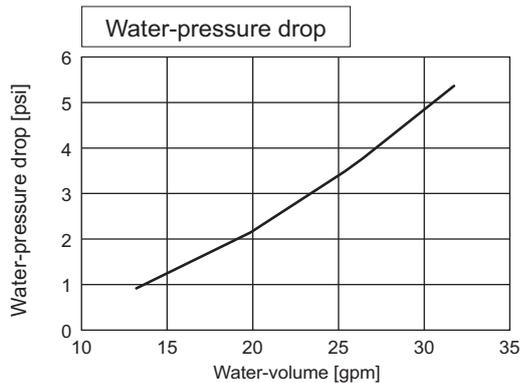
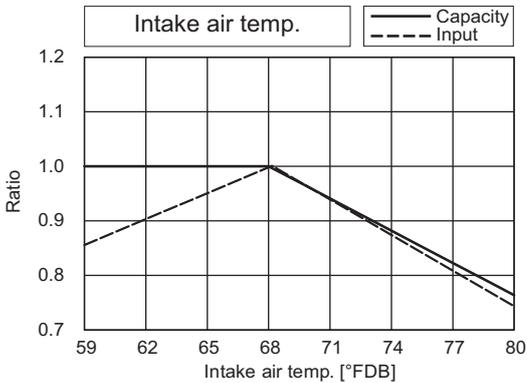
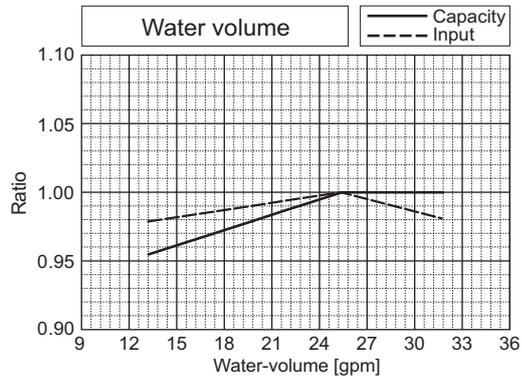
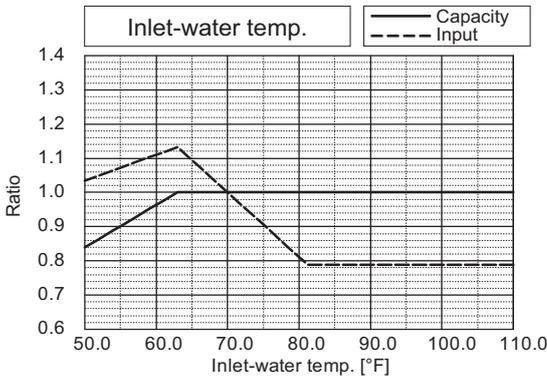
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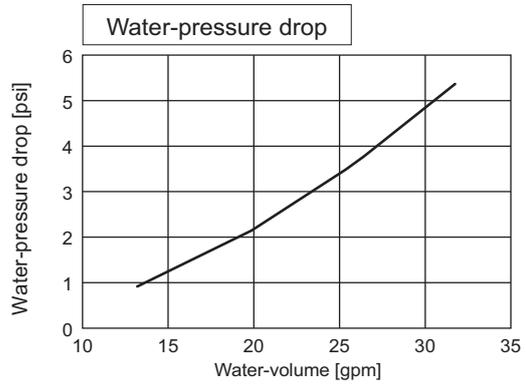
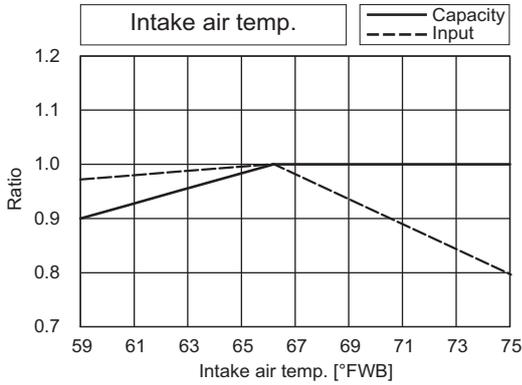
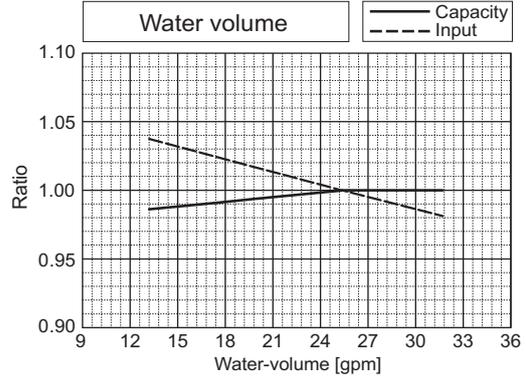
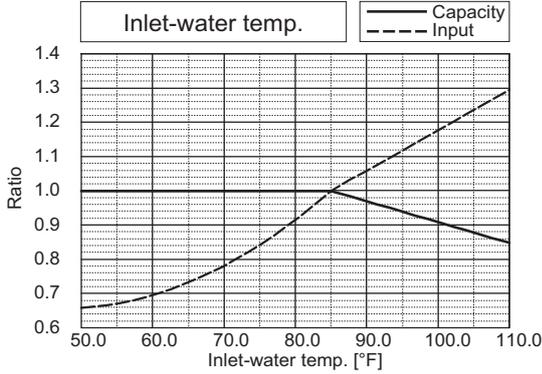
PQHY-		P96ZLMU			
Nominal Cooling Capacity	kW	28.1	Rated Cooling Capacity	kW	27.0
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Input	kW	4.65	Input	kW	(Non-Ducted) 4.26 (Ducted) 5.19



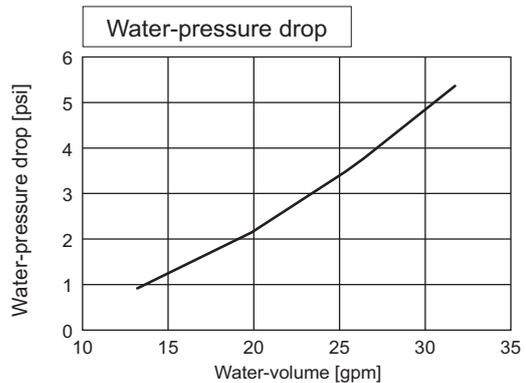
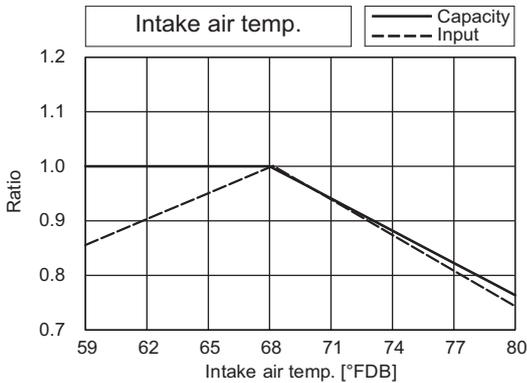
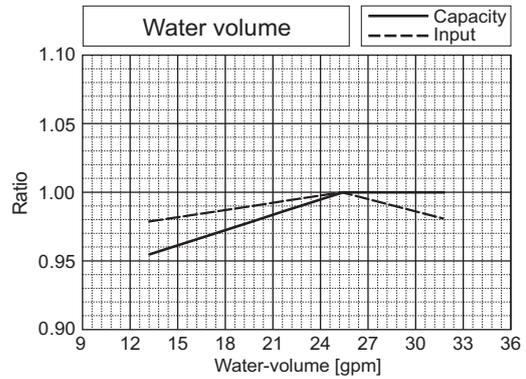
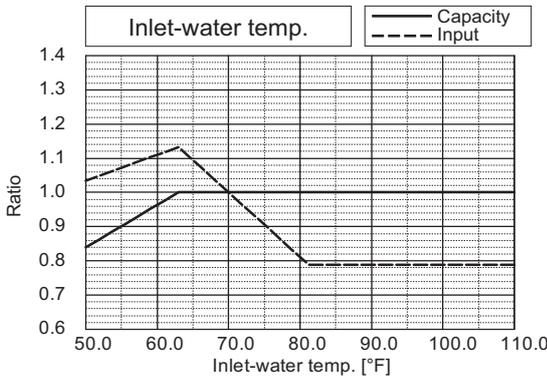
PQHY-		P96ZLMU			
Nominal Heating Capacity	kW	31.7	Rated Heating Capacity	kW	30.2
	BTU/h	108,000		BTU/h	103,000
Input	kW	5.05	Input	kW	(Non-Ducted) 4.65 (Ducted) 4.48



PQHY-			P120ZLMU		
Nominal Cooling Capacity	kW	35.2	Rated Cooling Capacity	kW	33.4
	BTU/h	120,000		BTU/h	114,000
Input	kW	7.24	Input	kW	(Non-Ducted) 6.66 (Ducted) 7.35



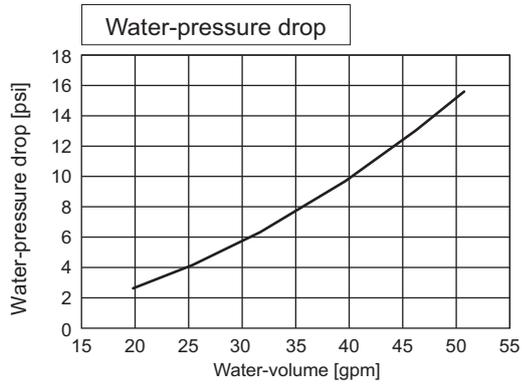
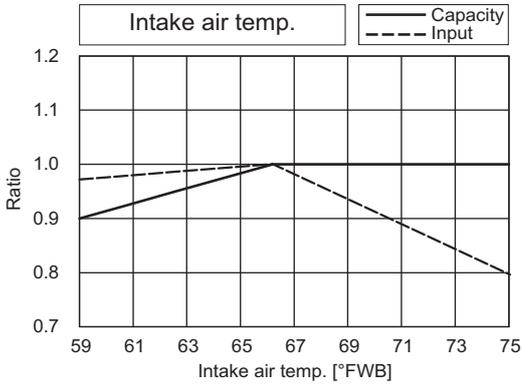
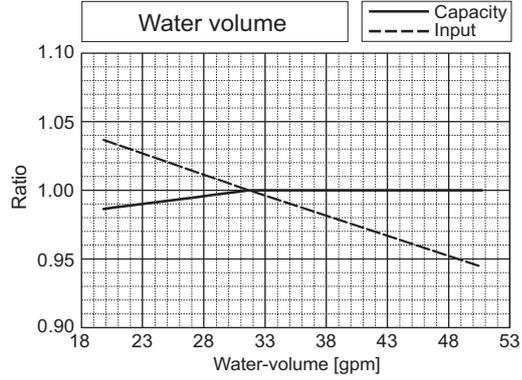
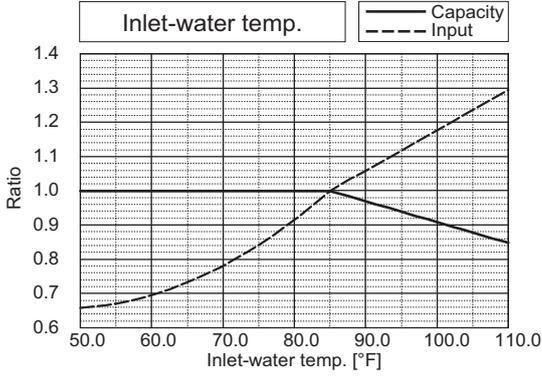
PQHY-			P120ZLMU		
Nominal Heating Capacity	kW	39.6	Rated Heating Capacity	kW	37.8
	BTU/h	135,000		BTU/h	129,000
Input	kW	6.83	Input	kW	(Non-Ducted) 6.29 (Ducted) 5.92



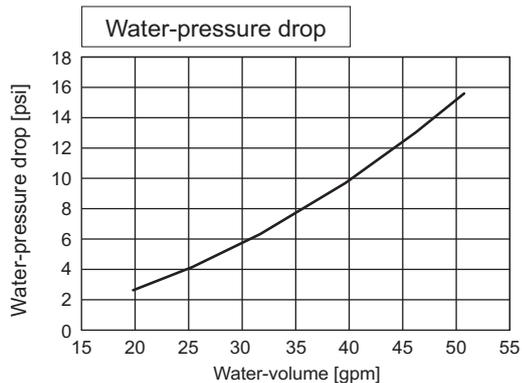
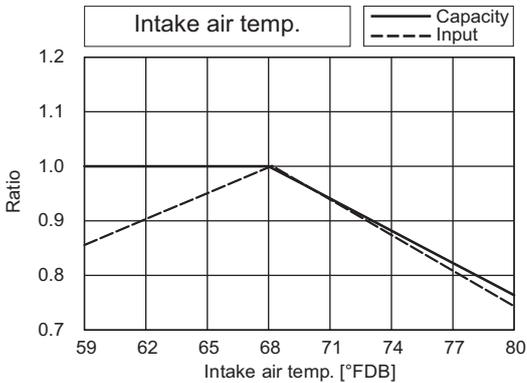
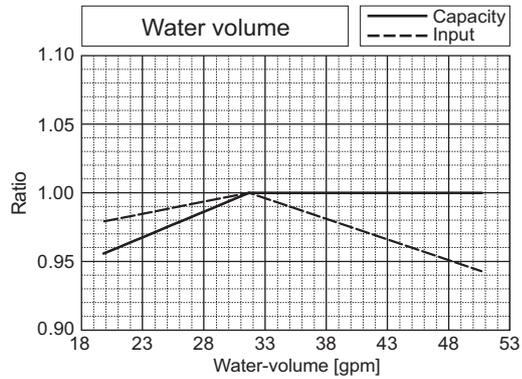
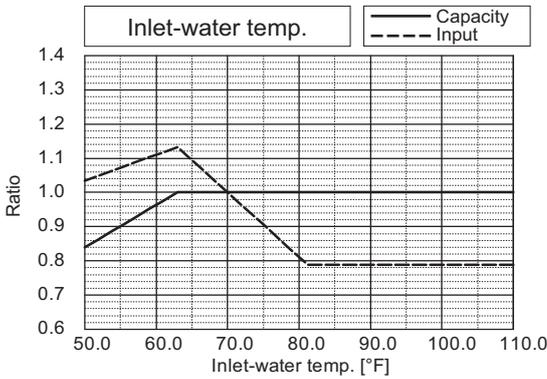
7. CAPACITY TABLES

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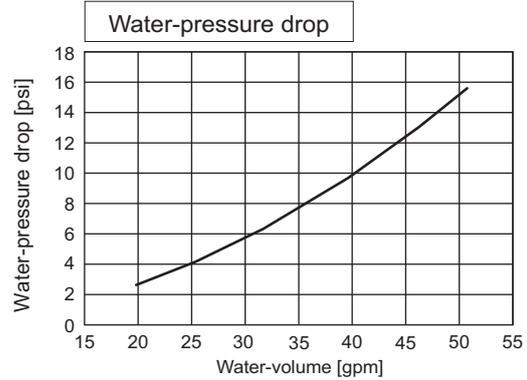
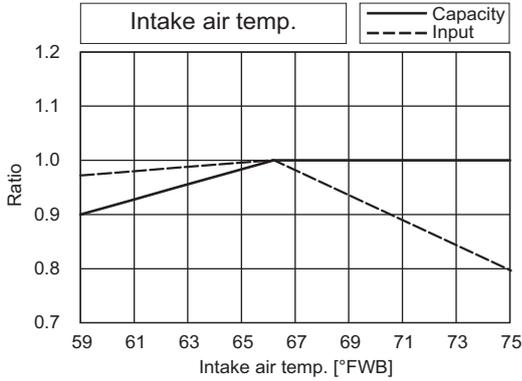
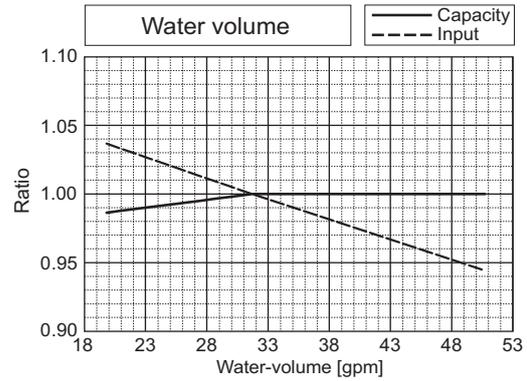
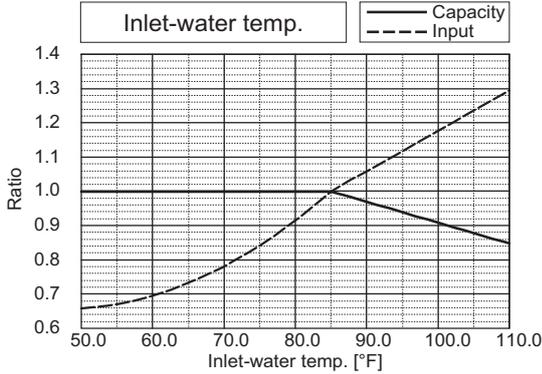
PQHY-			P144ZLMU		
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	8.78	Input	kW	(Non-Ducted) 8.07 (Ducted) 9.98



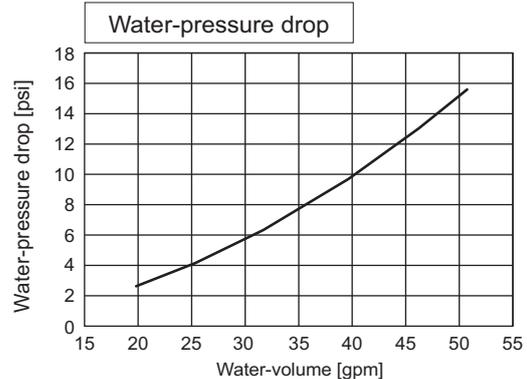
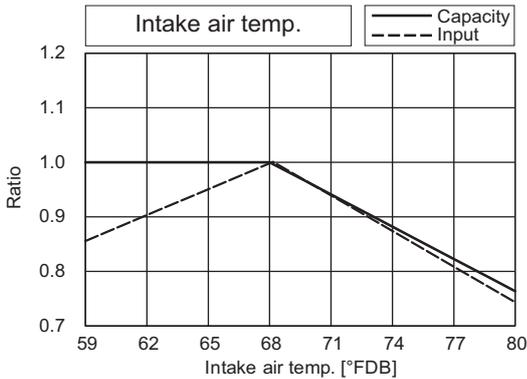
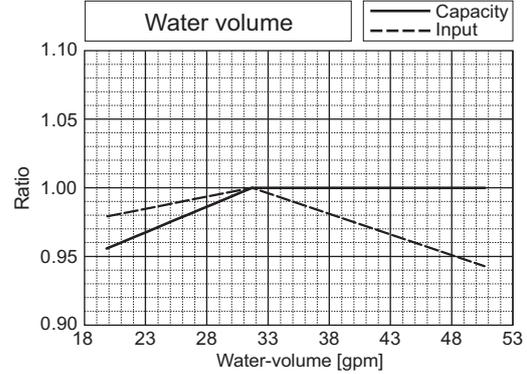
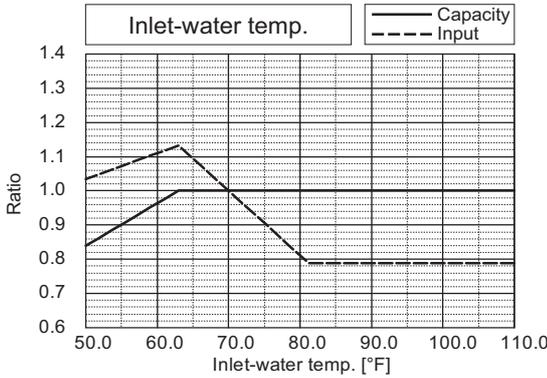
PQHY-			P144ZLMU		
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	8.11	Input	kW	(Non-Ducted) 7.47 (Ducted) 7.90



PQHY-		P168ZLMU			
Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	12.05	Input	kW	(Non-Ducted) 11.10 (Ducted) 11.88



PQHY-		P168ZLMU			
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.86	Input	kW	(Non-Ducted) 9.09 (Ducted) 9.72

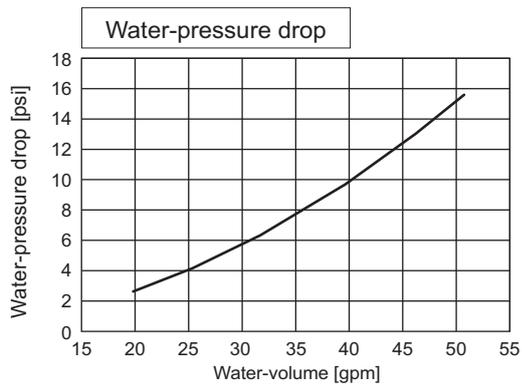
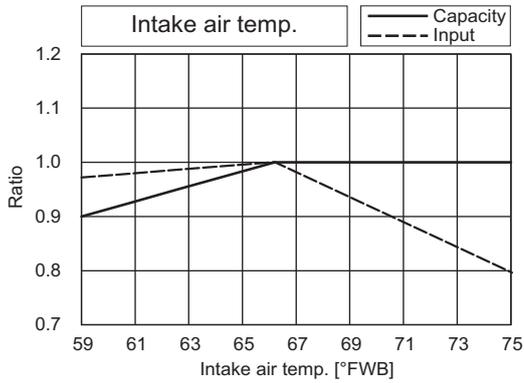
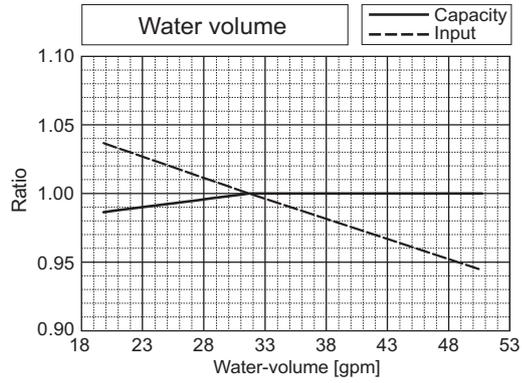
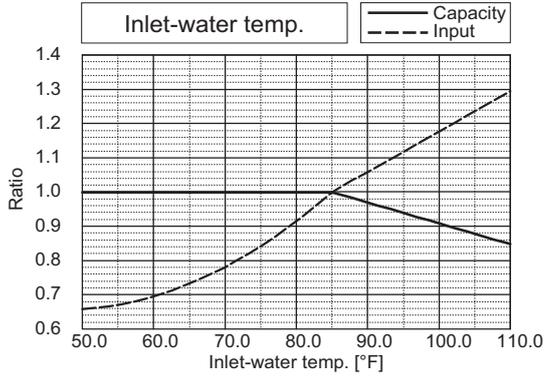


7. CAPACITY TABLES

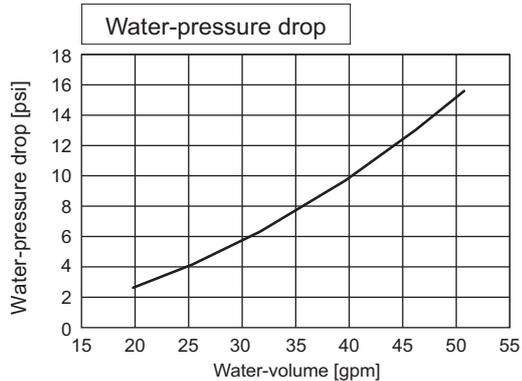
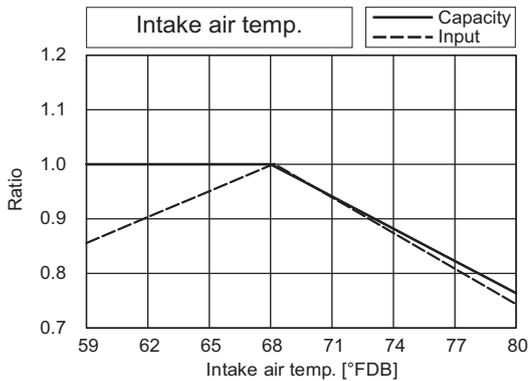
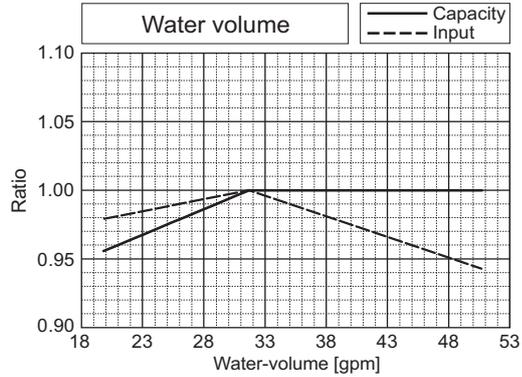
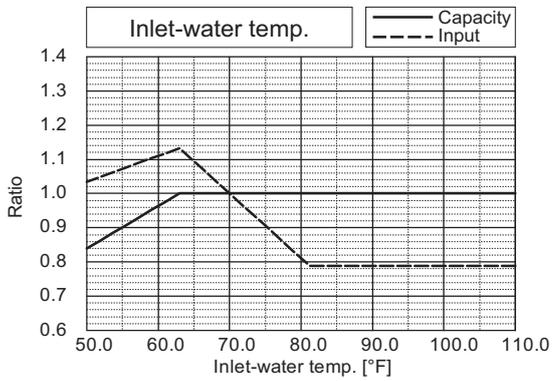
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PQHY-		P192ZLMU			
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	15.05	Input	kW	(Non-Ducted) 13.87 (Ducted) 14.19

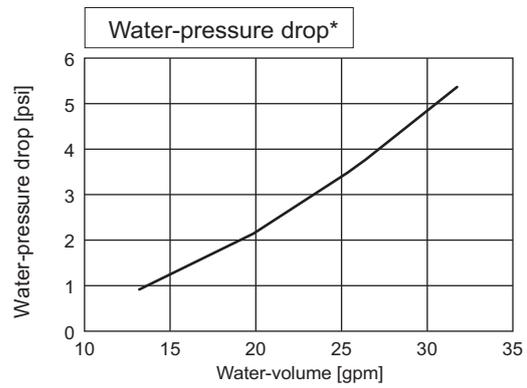
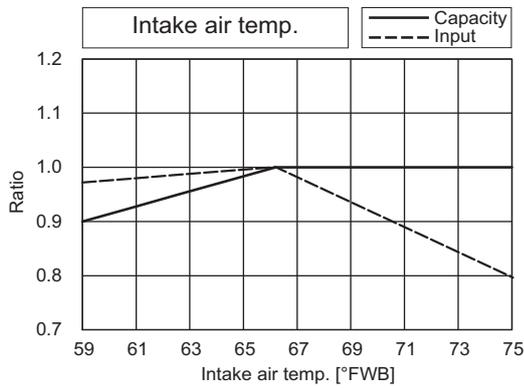
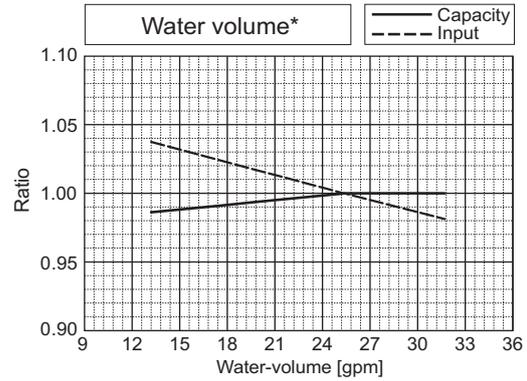
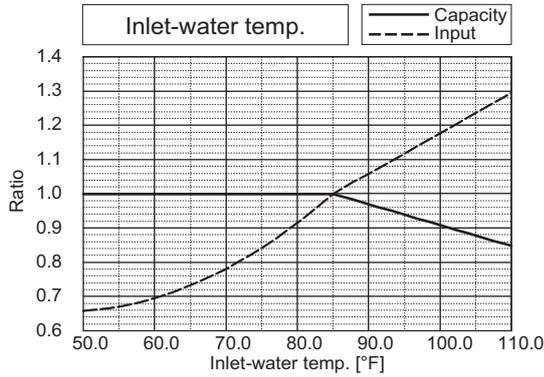


PQHY-		P192ZLMU			
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.90	Input	kW	(Non-Ducted) 10.97 (Ducted) 11.56

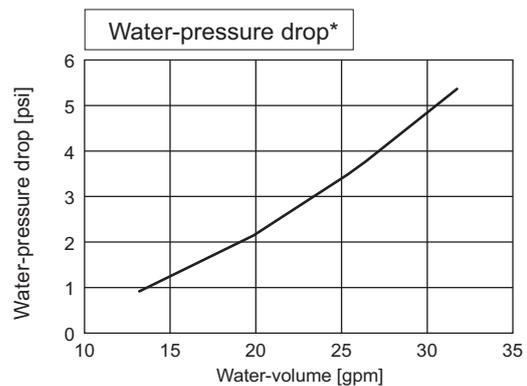
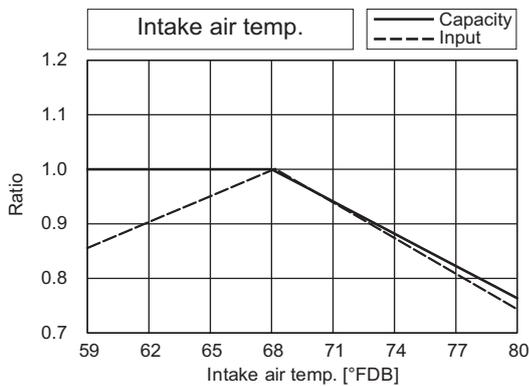
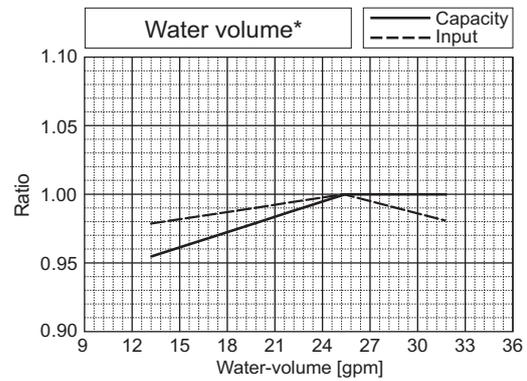
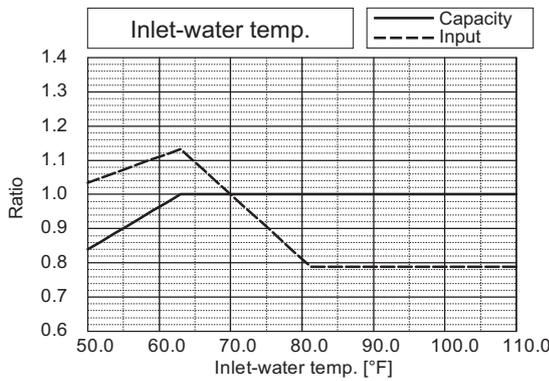


*The drawing indicates characteristic per unit.

PQHY-			P144ZSLMU		
Nominal Cooling Capacity	kW	42.2	Rated Cooling Capacity	kW	40.2
	BTU/h	144,000		BTU/h	137,000
Input	kW	7.11	Input	kW	(Non-Ducted) 6.53 (Ducted) 7.72



PQHY-			P144ZSLMU		
Nominal Heating Capacity	kW	46.9	Rated Heating Capacity	kW	44.5
	BTU/h	160,000		BTU/h	152,000
Input	kW	7.45	Input	kW	(Non-Ducted) 6.86 (Ducted) 7.22



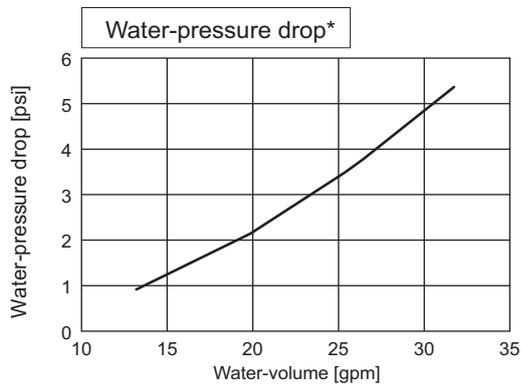
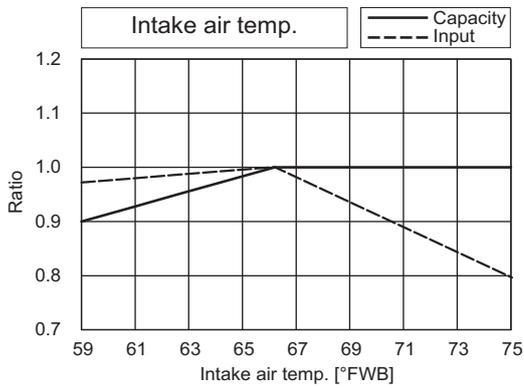
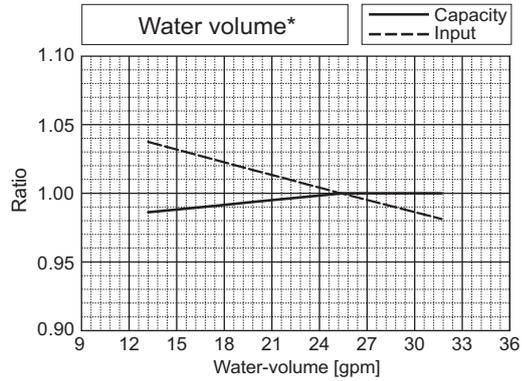
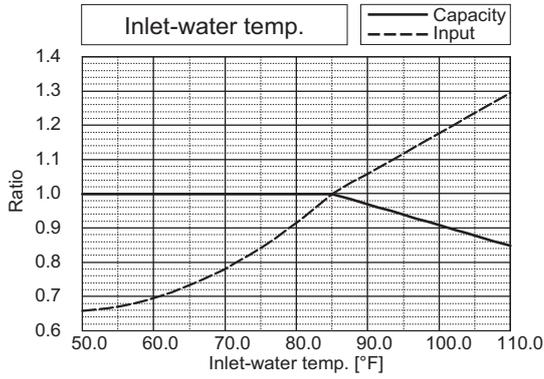
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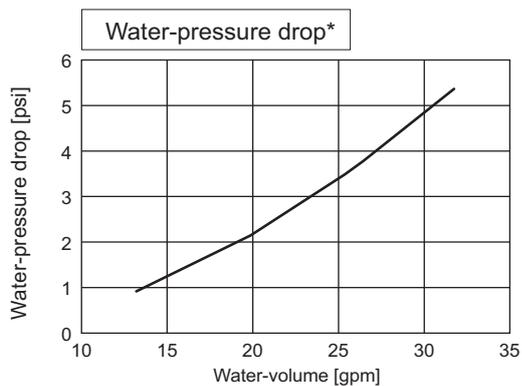
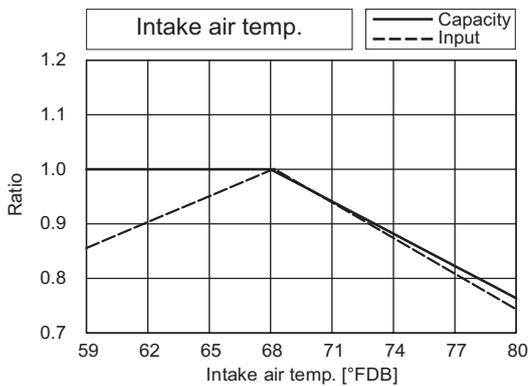
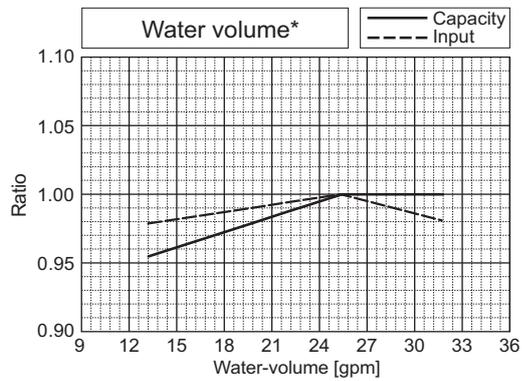
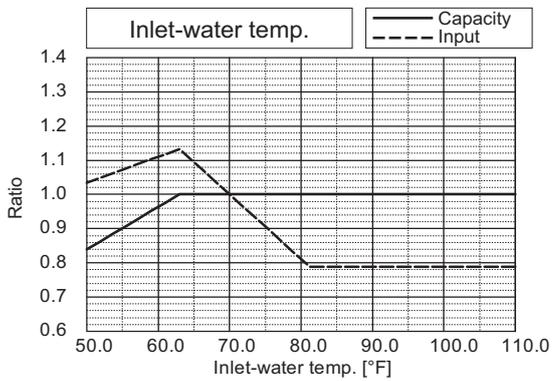
WY 575V

*The drawing indicates characteristic per unit.

PQHY-		P168ZSLMU			
Nominal Cooling Capacity	kW	49.2	Rated Cooling Capacity	kW	47.2
	BTU/h	168,000		BTU/h	161,000
Input	kW	9.33	Input	kW	(Non-Ducted) 8.58 (Ducted) 9.22

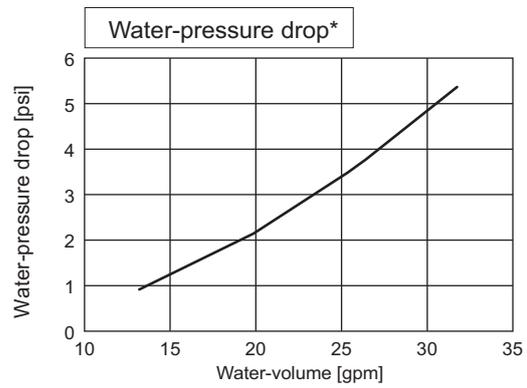
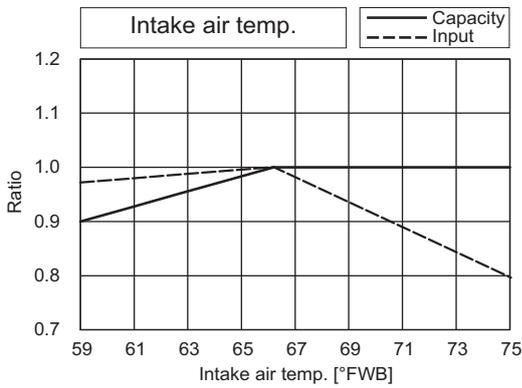
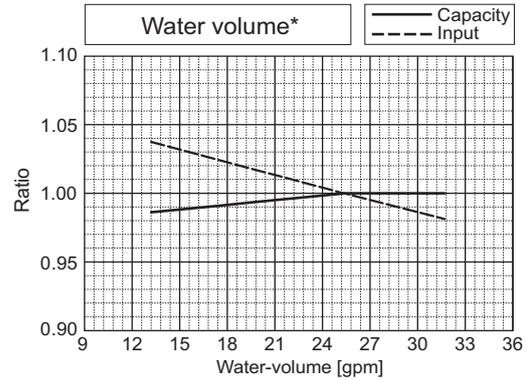
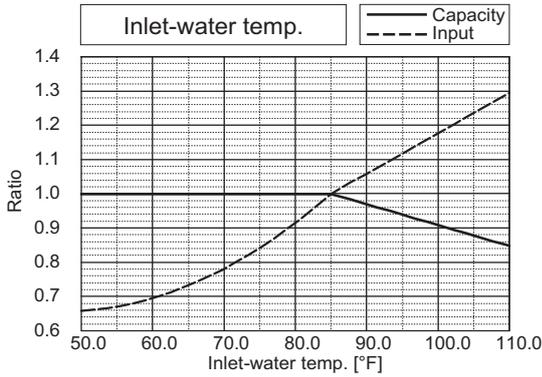


PQHY-		P168ZSLMU			
Nominal Heating Capacity	kW	55.1	Rated Heating Capacity	kW	52.5
	BTU/h	188,000		BTU/h	179,000
Input	kW	9.34	Input	kW	(Non-Ducted) 8.60 (Ducted) 8.03

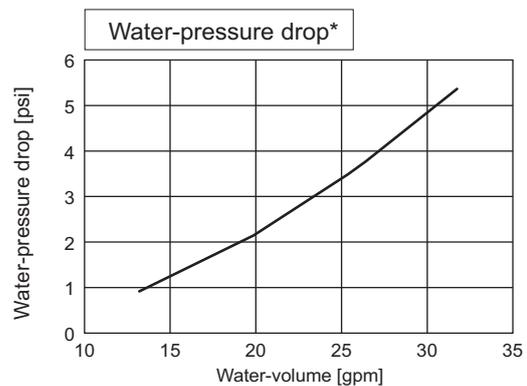
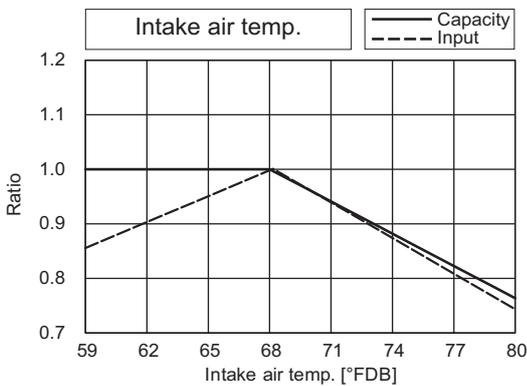
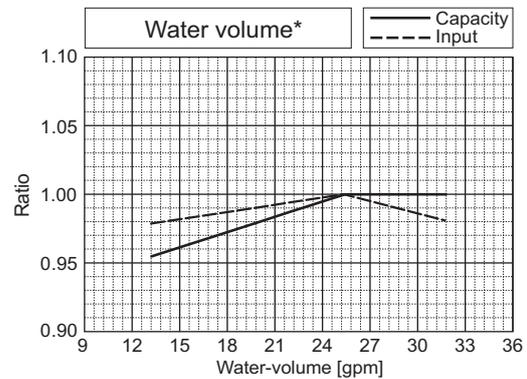
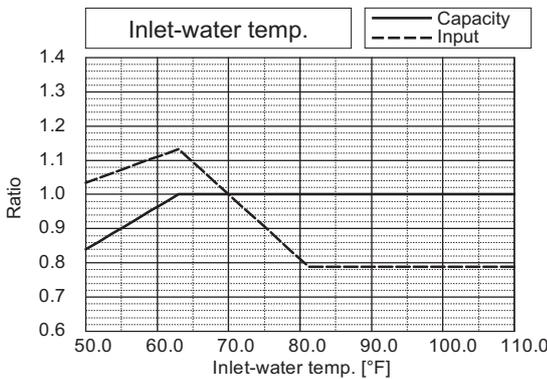


PQHY-			P192ZSLMU		
Nominal Cooling Capacity	kW	56.3	Rated Cooling Capacity	kW	53.6
	BTU/h	192,000		BTU/h	183,000
Input	kW	11.30	Input	kW	(Non-Ducted) 10.40 (Ducted) 10.98

*The drawing indicates characteristic per unit.



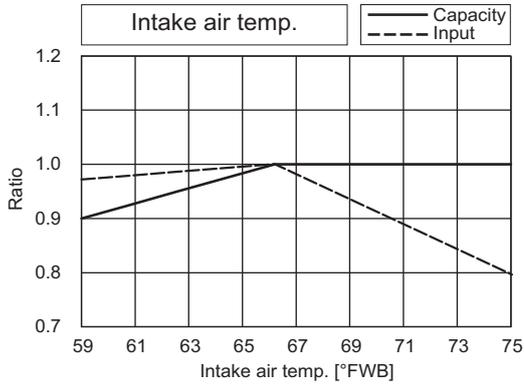
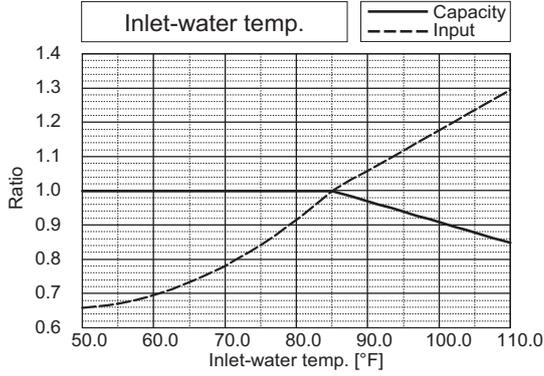
PQHY-			P192ZSLMU		
Nominal Heating Capacity	kW	63.0	Rated Heating Capacity	kW	60.1
	BTU/h	215,000		BTU/h	205,000
Input	kW	11.02	Input	kW	(Non-Ducted) 10.16 (Ducted) 8.90



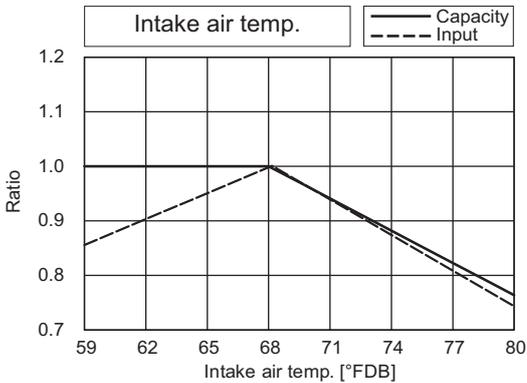
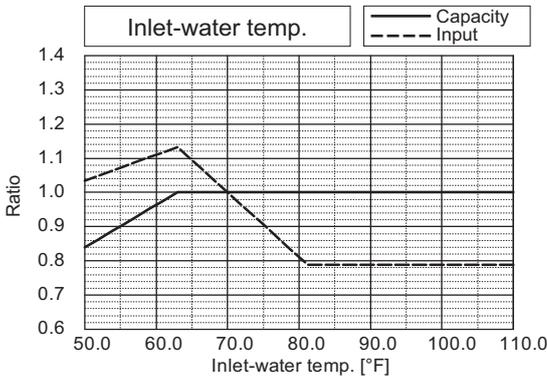
7. CAPACITY TABLES

WY 575V

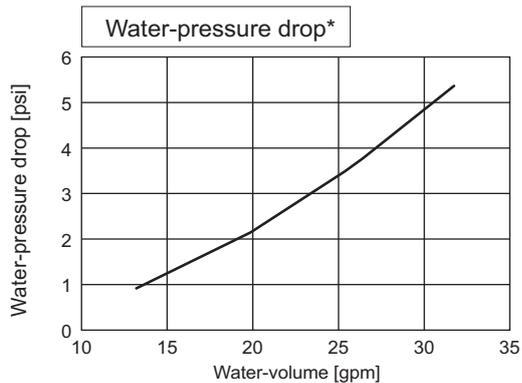
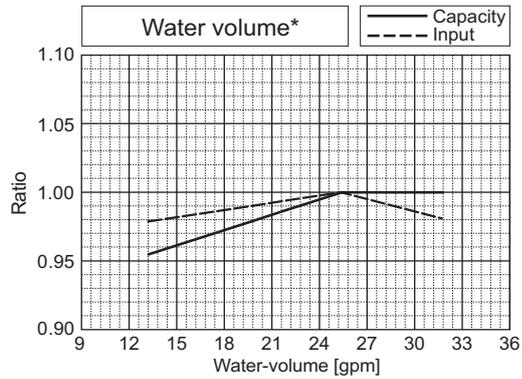
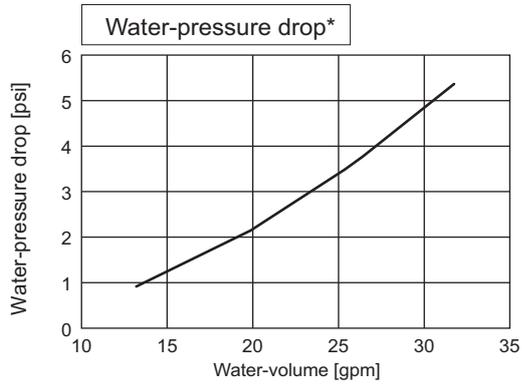
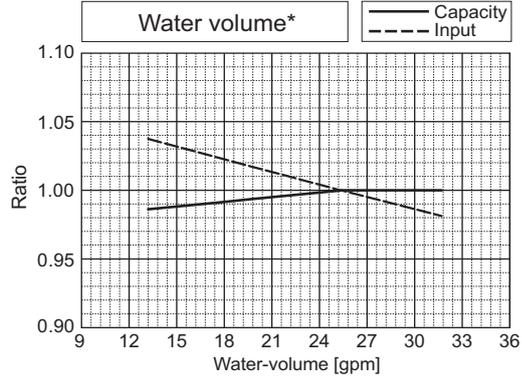
PQHY-		P216ZSLMU			
Nominal Cooling Capacity	kW	63.3	Rated Cooling Capacity	kW	60.4
	BTU/h	216,000		BTU/h	206,000
Input	kW	14.03	Input	kW	(Non-Ducted) 12.93 (Ducted) 13.24



PQHY-		P216ZSLMU			
Nominal Heating Capacity	kW	71.2	Rated Heating Capacity	kW	68.0
	BTU/h	243,000		BTU/h	232,000
Input	kW	12.88	Input	kW	(Non-Ducted) 11.88 (Ducted) 10.35

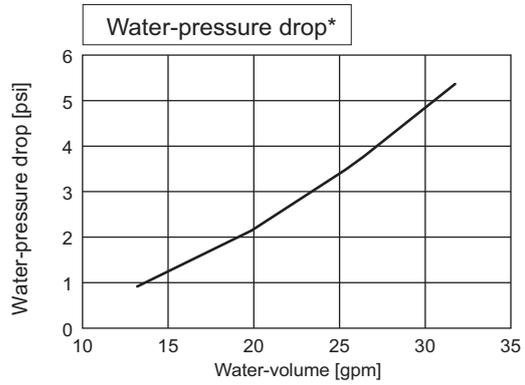
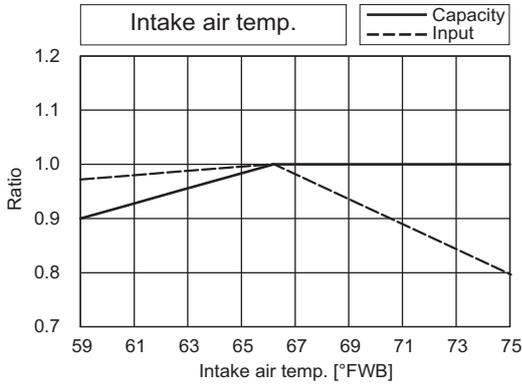
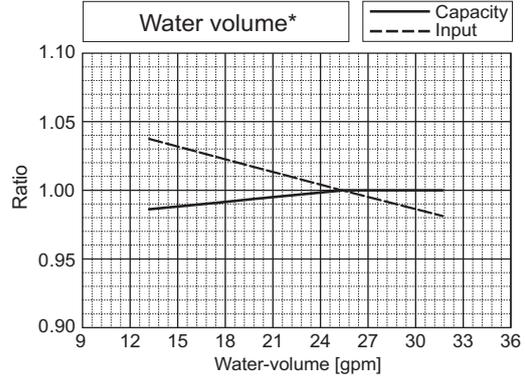
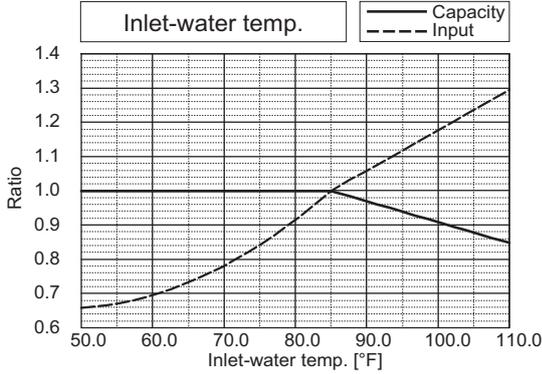


*The drawing indicates characteristic per unit.

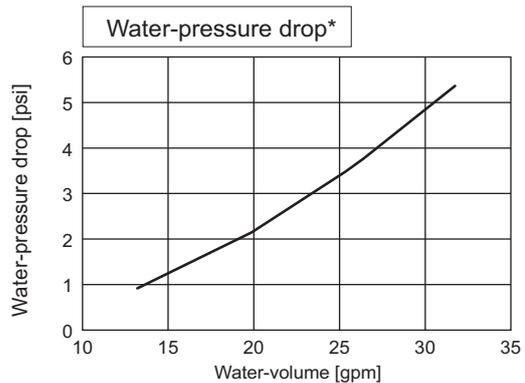
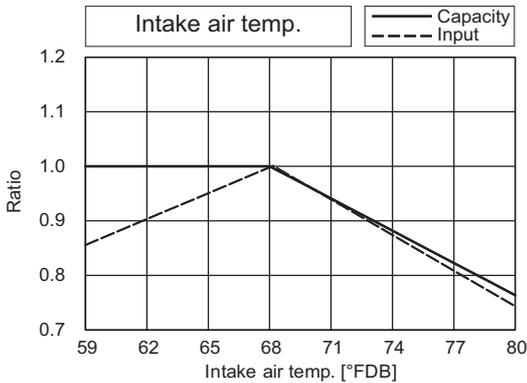
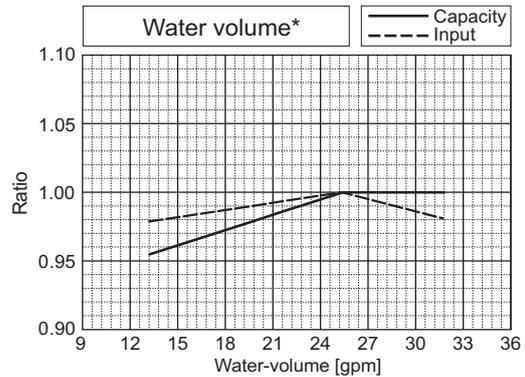
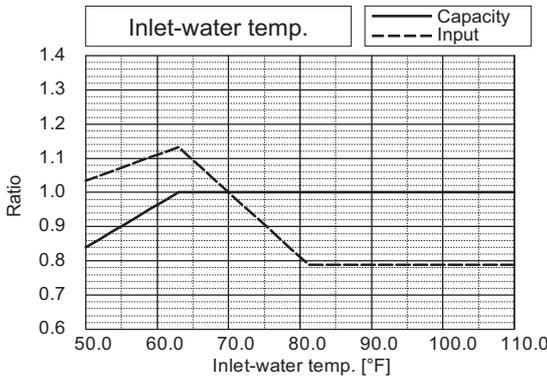


PQHY-			P240ZSLMU		
Nominal Cooling Capacity	kW	70.3	Rated Cooling Capacity	kW	66.8
	BTU/h	240,000		BTU/h	228,000
Input	kW	16.89	Input	kW	(Non-Ducted) 15.57 (Ducted) 16.15

*The drawing indicates characteristic per unit.



PQHY-			P240ZSLMU		
Nominal Heating Capacity	kW	79.1	Rated Heating Capacity	kW	75.6
	BTU/h	270,000		BTU/h	258,000
Input	kW	14.58	Input	kW	(Non-Ducted) 13.45 (Ducted) 12.02



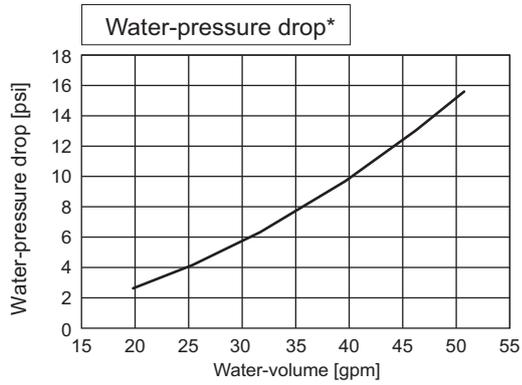
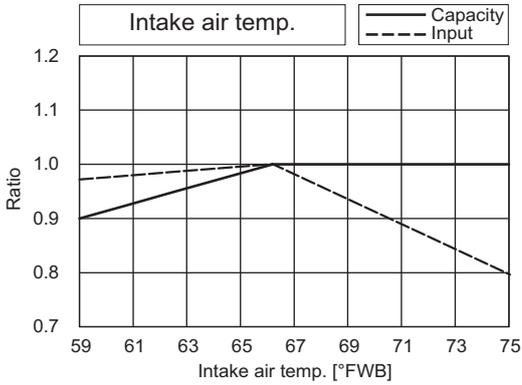
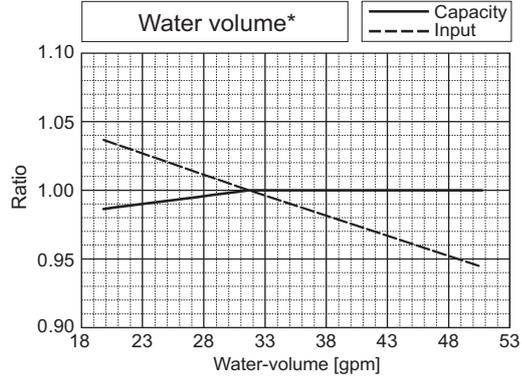
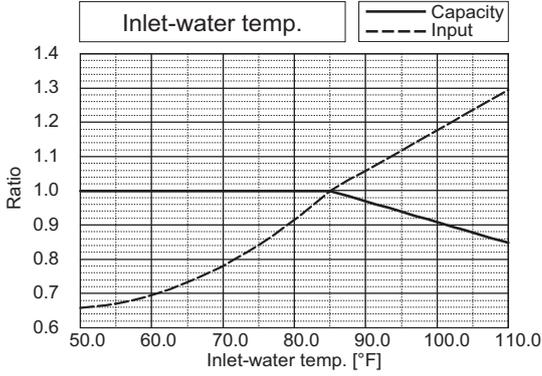
7. CAPACITY TABLES

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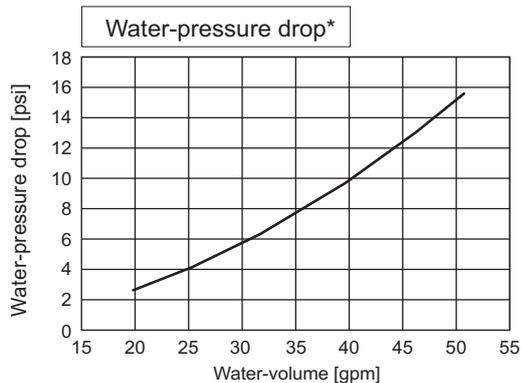
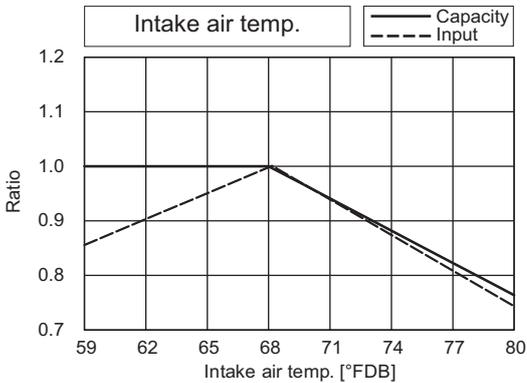
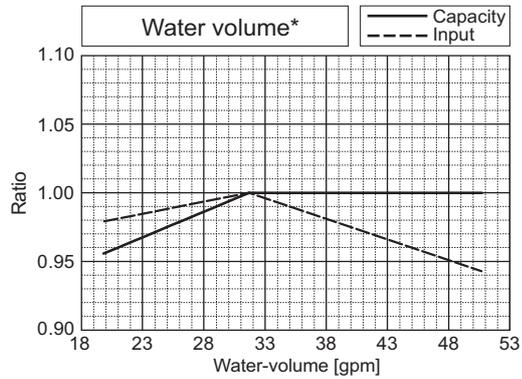
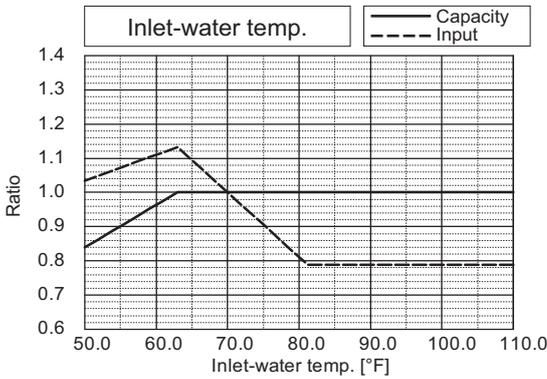
WY 575V

*The drawing indicates characteristic per unit.

PQHY-		P288ZSLMU			
Nominal Cooling Capacity	kW	84.4	Rated Cooling Capacity	kW	80.6
	BTU/h	288,000		BTU/h	275,000
Input	kW	20.42	Input	kW	(Non-Ducted) 18.82 (Ducted) 21.43

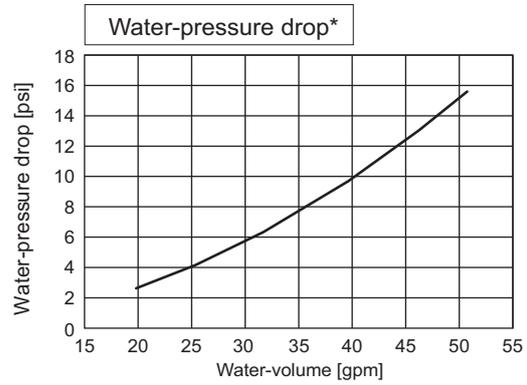
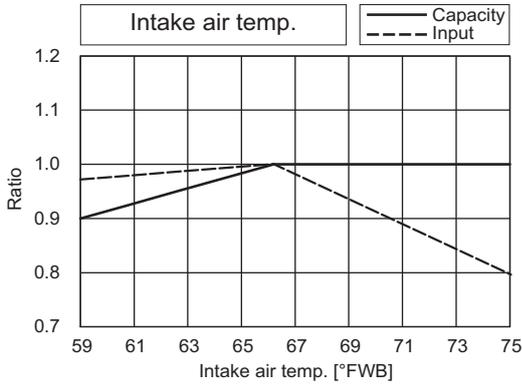
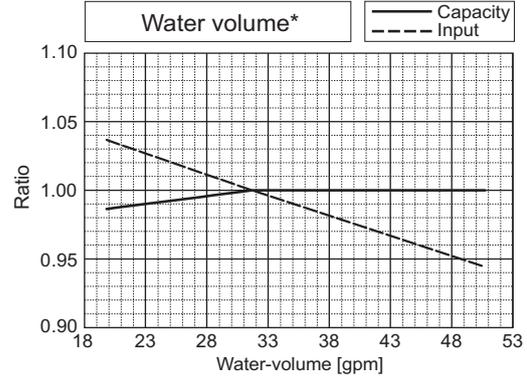
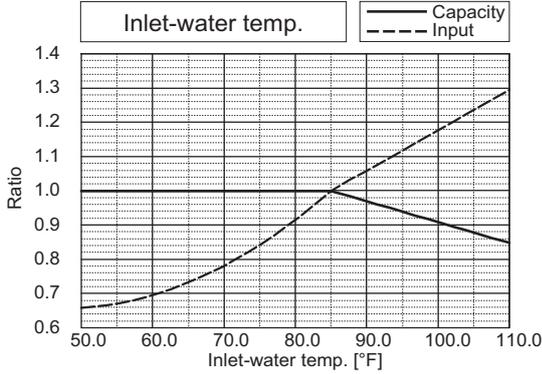


PQHY-		P288ZSLMU			
Nominal Heating Capacity	kW	94.7	Rated Heating Capacity	kW	90.3
	BTU/h	323,000		BTU/h	308,000
Input	kW	17.50	Input	kW	(Non-Ducted) 16.13 (Ducted) 16.05

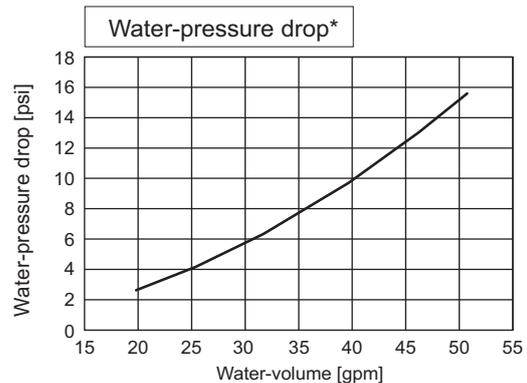
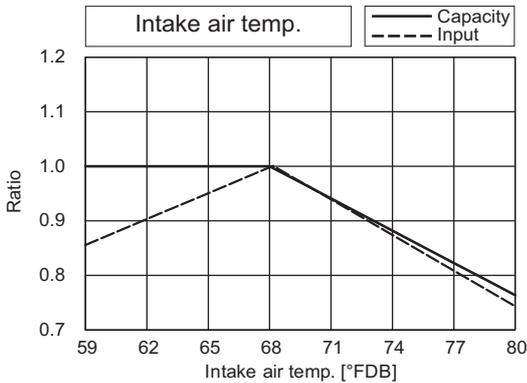
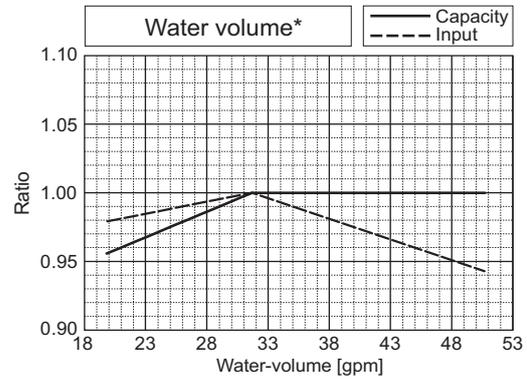
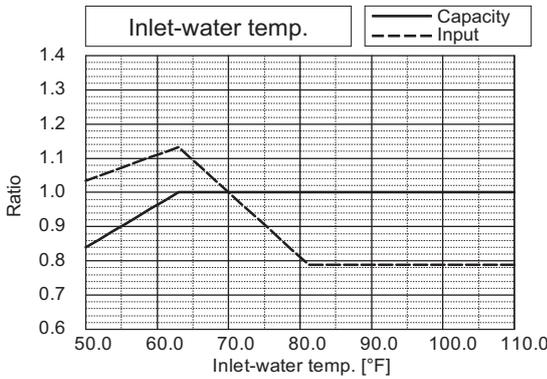


*The drawing indicates characteristic per unit.

PQHY-			P312ZSLMU		
Nominal Cooling Capacity	kW	91.4	Rated Cooling Capacity	kW	87.0
	BTU/h	312,000		BTU/h	297,000
Input	kW	23.41	Input	kW	(Non-Ducted) 21.59 (Ducted) 23.67



PQHY-			P312ZSLMU		
Nominal Heating Capacity	kW	102.6	Rated Heating Capacity	kW	97.9
	BTU/h	350,000		BTU/h	334,000
Input	kW	19.11	Input	kW	(Non-Ducted) 17.62 (Ducted) 17.96

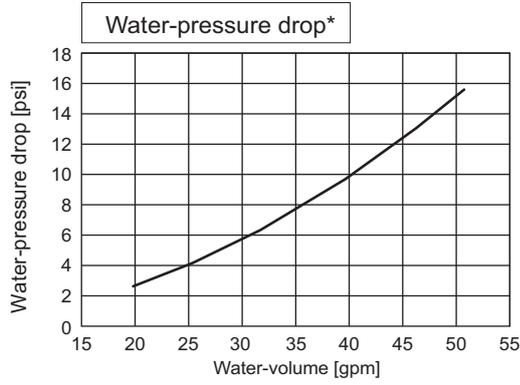
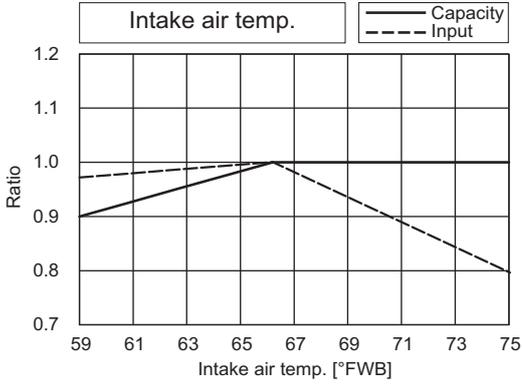
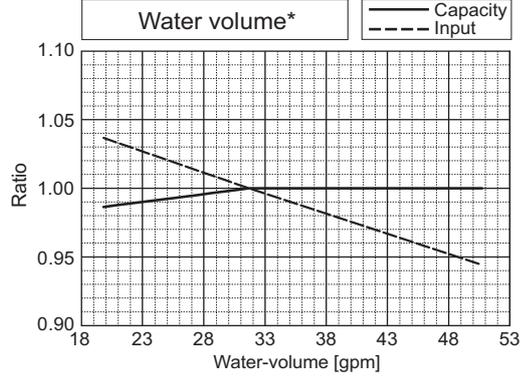
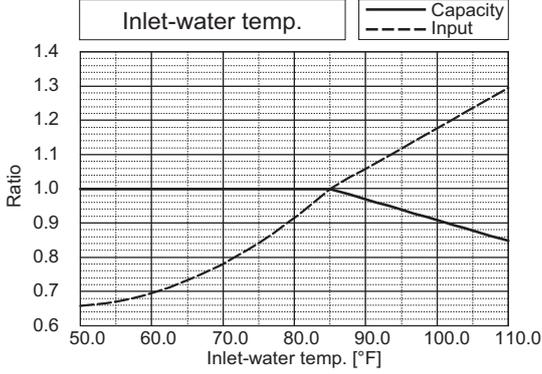


7. CAPACITY TABLES

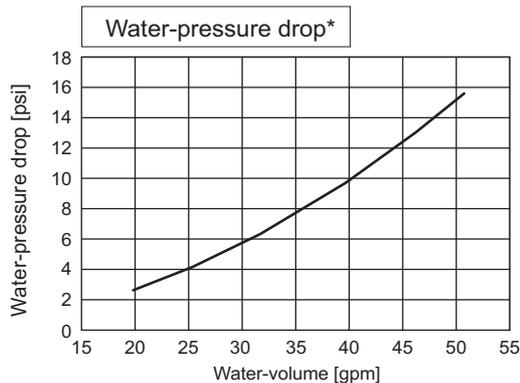
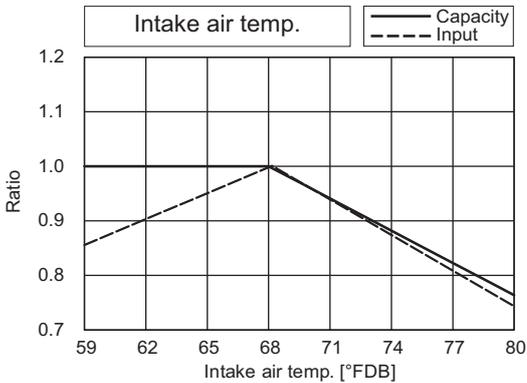
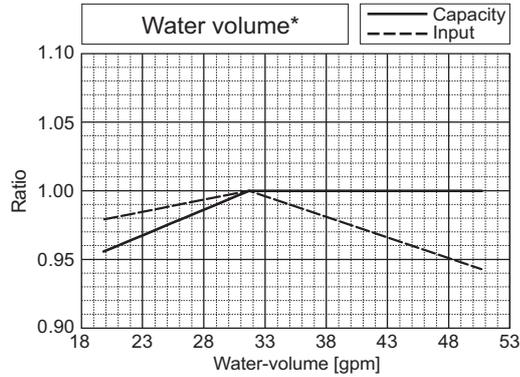
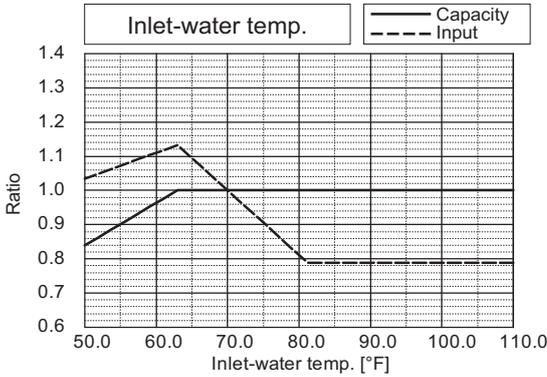
WY 575V

*The drawing indicates characteristic per unit.

PQHY-		P336ZSLMU			
Nominal Cooling Capacity	kW	98.5	Rated Cooling Capacity	kW	93.8
	BTU/h	336,000		BTU/h	320,000
Input	kW	26.84	Input	kW	(Non-Ducted) 24.76 (Ducted) 25.85



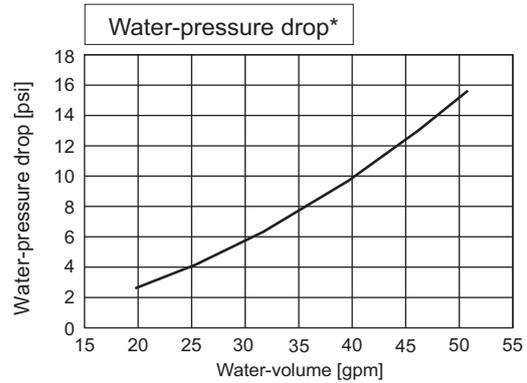
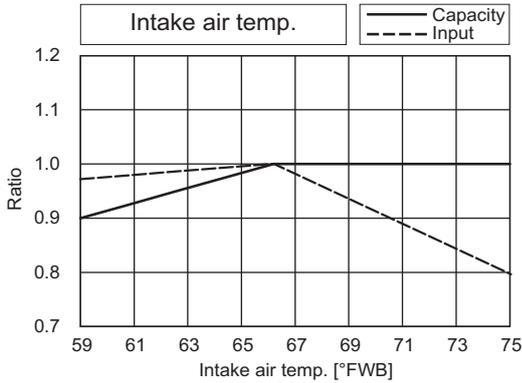
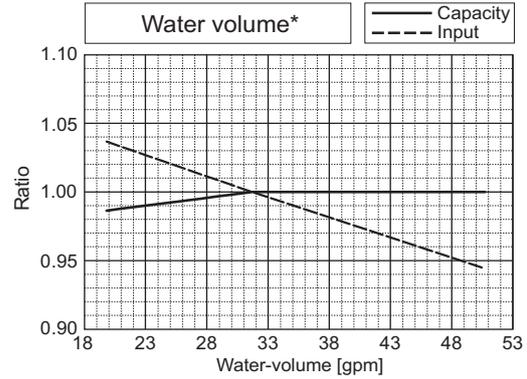
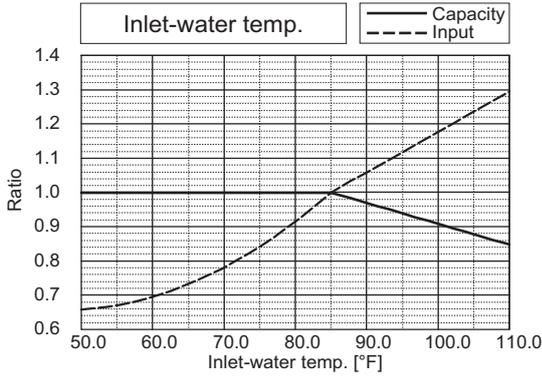
PQHY-		P336ZSLMU			
Nominal Heating Capacity	kW	110.8	Rated Heating Capacity	kW	105.8
	BTU/h	378,000		BTU/h	361,000
Input	kW	20.77	Input	kW	(Non-Ducted) 19.16 (Ducted) 20.05



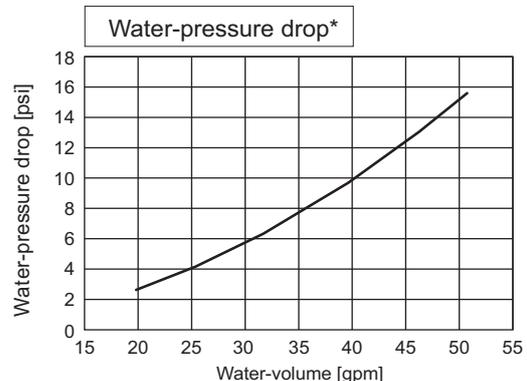
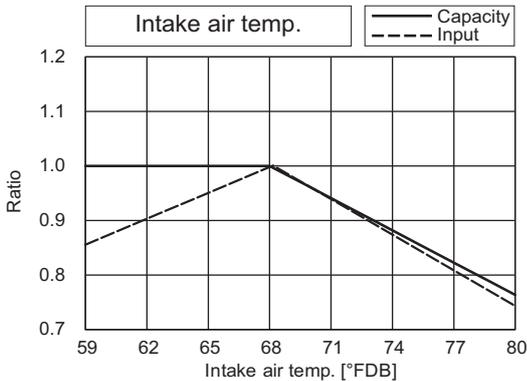
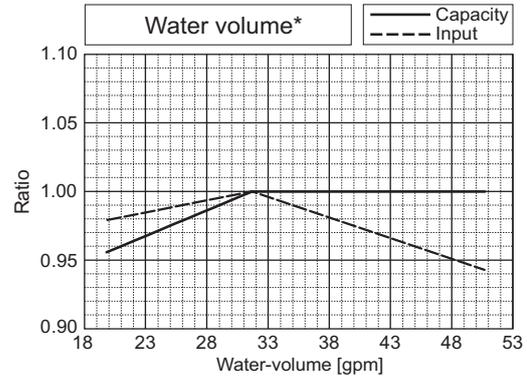
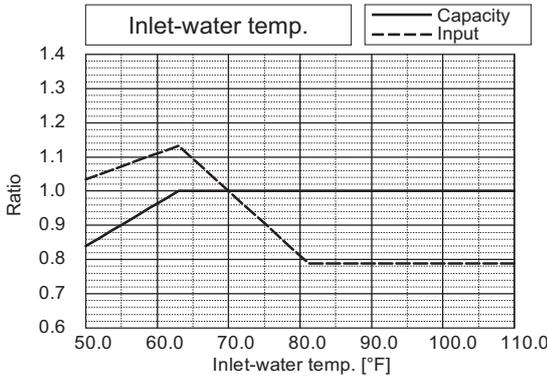
7. CAPACITY TABLES

PQHY-		P360ZSLMU			
Nominal Cooling Capacity	kW	105.5	Rated Cooling Capacity	kW	100.2
	BTU/h	360,000		BTU/h	342,000
Input	kW	29.43	Input	kW	(Non-Ducted) 27.17 (Ducted) 27.41

*The drawing indicates characteristic per unit.



PQHY-		P360ZSLMU			
Nominal Heating Capacity	kW	118.7	Rated Heating Capacity	kW	113.4
	BTU/h	405,000		BTU/h	387,000
Input	kW	22.85	Input	kW	(Non-Ducted) 21.09 (Ducted) 21.70

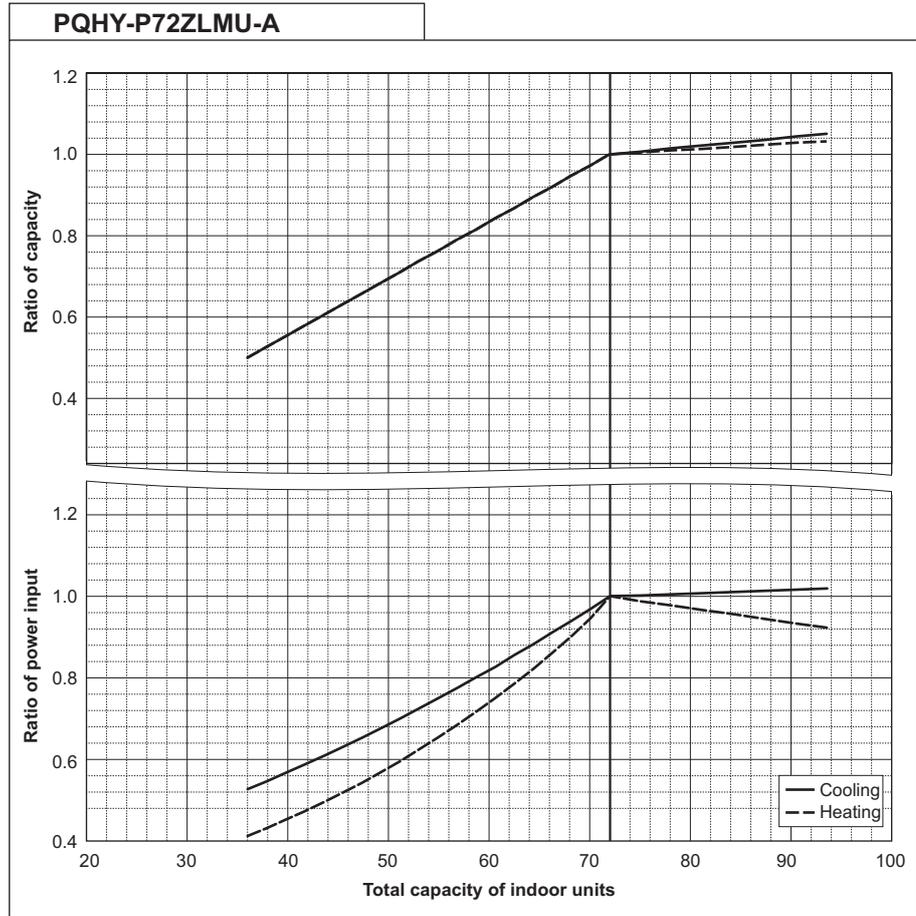


7-2. Correction by total indoor

CITY MULTI system have different capacities and inputs when many combinations of indoor units with different total capacities are connected. Using following tables, the maximum capacity can be found to ensure the system is installed with enough capacity for a particular application.

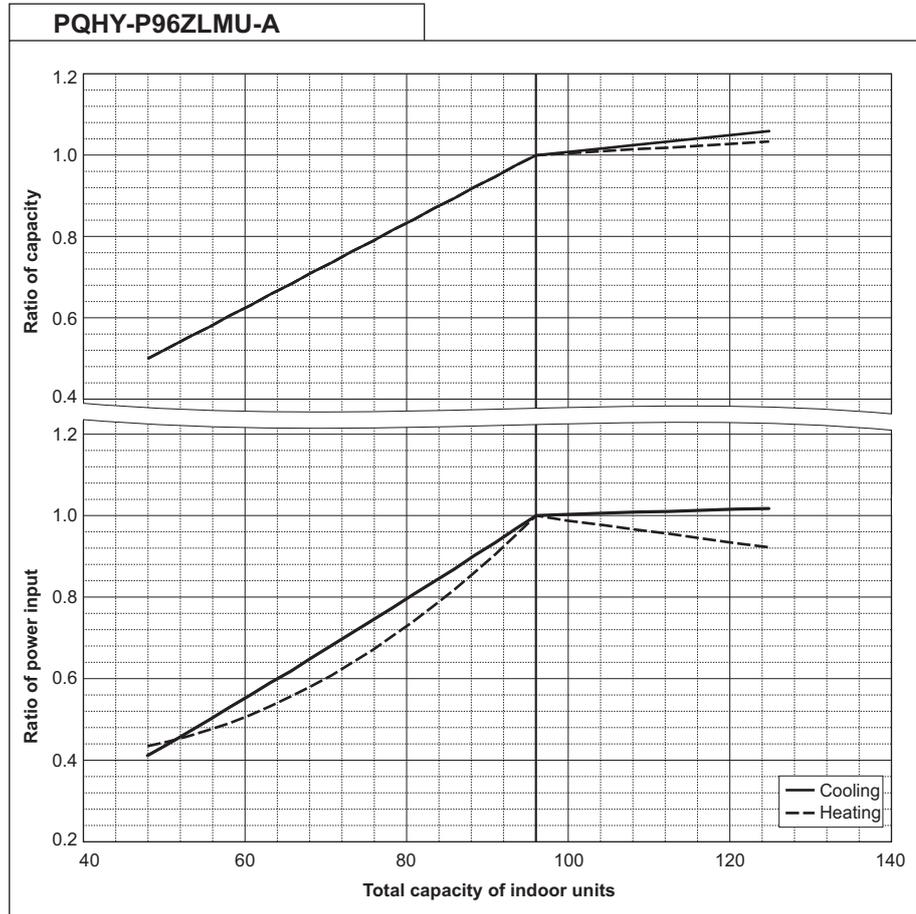
PQHY-		P72ZLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	72,000	
	kW	21.1	
Rated cooling capacity	BTU/h	69,000	
	kW	20.2	
Input	kW	2.96	3.12

PQHY-		P72ZLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	80,000	
	kW	23.4	
Rated Heating capacity	BTU/h	76,000	
	kW	22.3	
Input	kW	3.34	3.36



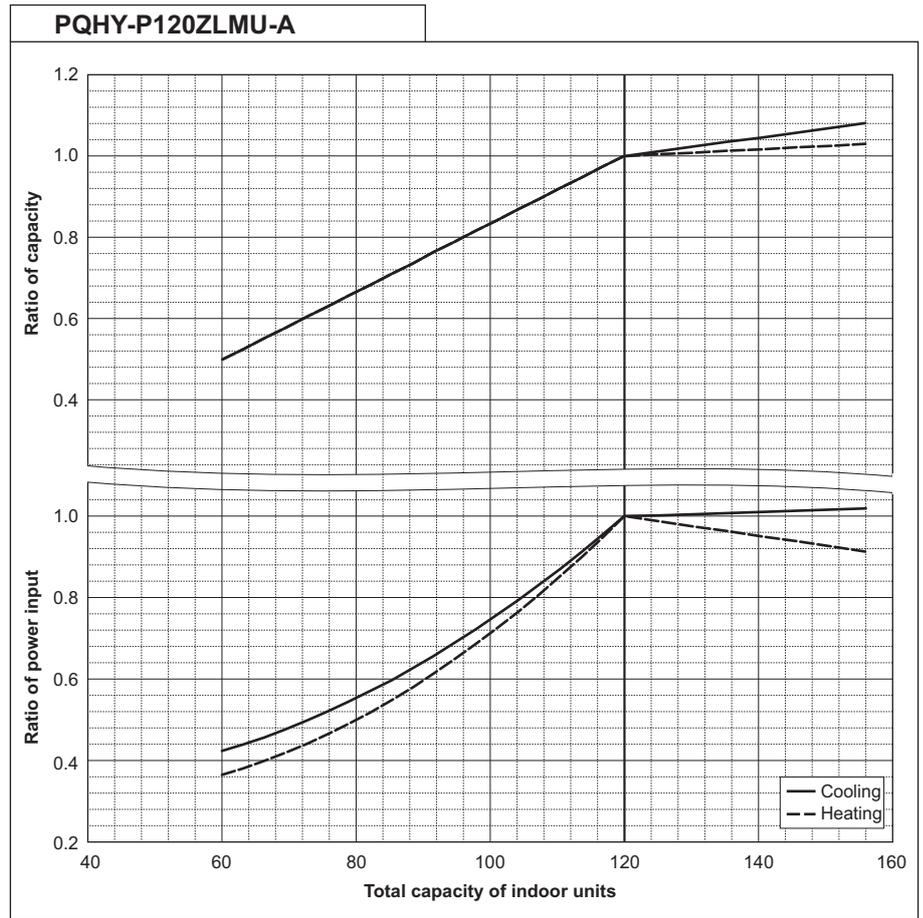
PQHY-		P96ZLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	96,000	
	kW	28.1	
Rated cooling capacity	BTU/h	92,000	
	kW	27.0	
Input	kW	4.26	5.19

PQHY-		P96ZLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	108,000	
	kW	31.7	
Rated Heating capacity	BTU/h	103,000	
	kW	30.2	
Input	kW	4.65	4.48



PQHY-		P120ZLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	120,000	
	kW	35.2	
Input	kW	7.24	
	BTU/h	114,000	
Rated cooling capacity	kW	33.4	
	Input kW	6.66	7.35

PQHY-		P120ZLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	135,000	
	kW	39.6	
Input	kW	6.83	
	BTU/h	129,000	
Rated Heating capacity	kW	37.8	
	Input kW	6.29	5.92

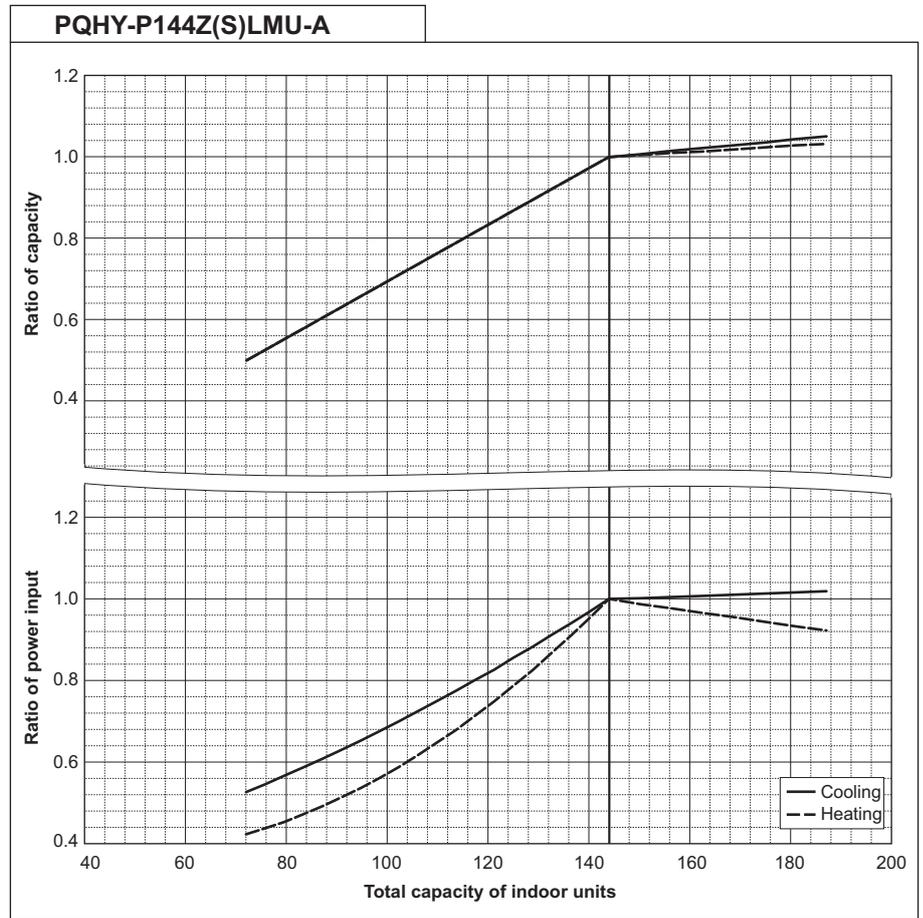


PQHY-		P144ZLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	144,000	
	kW	42.2	
Input	kW	8.78	
	BTU/h	137,000	
Rated cooling capacity	kW	40.2	
	Input kW	8.07	9.98

PQHY-		P144ZLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	160,000	
	kW	46.9	
Input	kW	8.11	
	BTU/h	152,000	
Rated Heating capacity	kW	44.5	
	Input kW	7.47	7.90

PQHY-		P144ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	144,000	
	kW	42.2	
Input	kW	7.11	
	BTU/h	137,000	
Rated cooling capacity	kW	40.2	
	Input kW	6.53	7.72

PQHY-		P144ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	160,000	
	kW	46.9	
Input	kW	7.45	
	BTU/h	152,000	
Rated Heating capacity	kW	44.5	
	Input kW	6.86	7.22



7. CAPACITY TABLES

Z(S)LMU

WY 575V

PQHY-		P168ZLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	168,000	
	kW	49.2	
Input	kW	12.05	
	BTU/h	161,000	
Rated cooling capacity	kW	47.2	
	Input kW	11.10	11.88

PQHY-		P168ZLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	188,000	
	kW	55.1	
Input	kW	9.86	
	BTU/h	179,000	
Rated Heating capacity	kW	52.5	
	Input kW	9.09	9.72

PQHY-		P168ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	168,000	
	kW	49.2	
Input	kW	9.33	
	BTU/h	161,000	
Rated cooling capacity	kW	47.2	
	Input kW	8.58	9.22

PQHY-		P168ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	188,000	
	kW	55.1	
Input	kW	9.34	
	BTU/h	179,000	
Rated Heating capacity	kW	52.5	
	Input kW	8.60	8.03

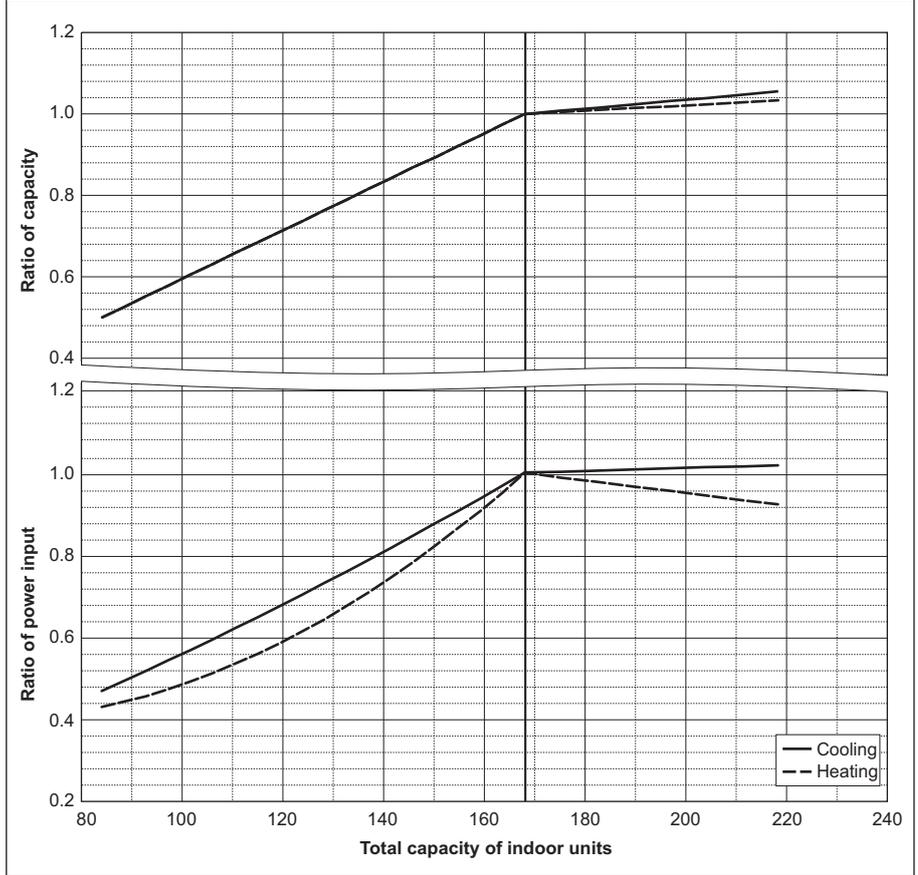
PQHY-		P192ZLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	192,000	
	kW	56.3	
Input	kW	15.05	
	BTU/h	183,000	
Rated cooling capacity	kW	53.6	
	Input kW	13.87	14.19

PQHY-		P192ZLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	215,000	
	kW	63.0	
Input	kW	11.90	
	BTU/h	205,000	
Rated Heating capacity	kW	60.1	
	Input kW	10.97	11.56

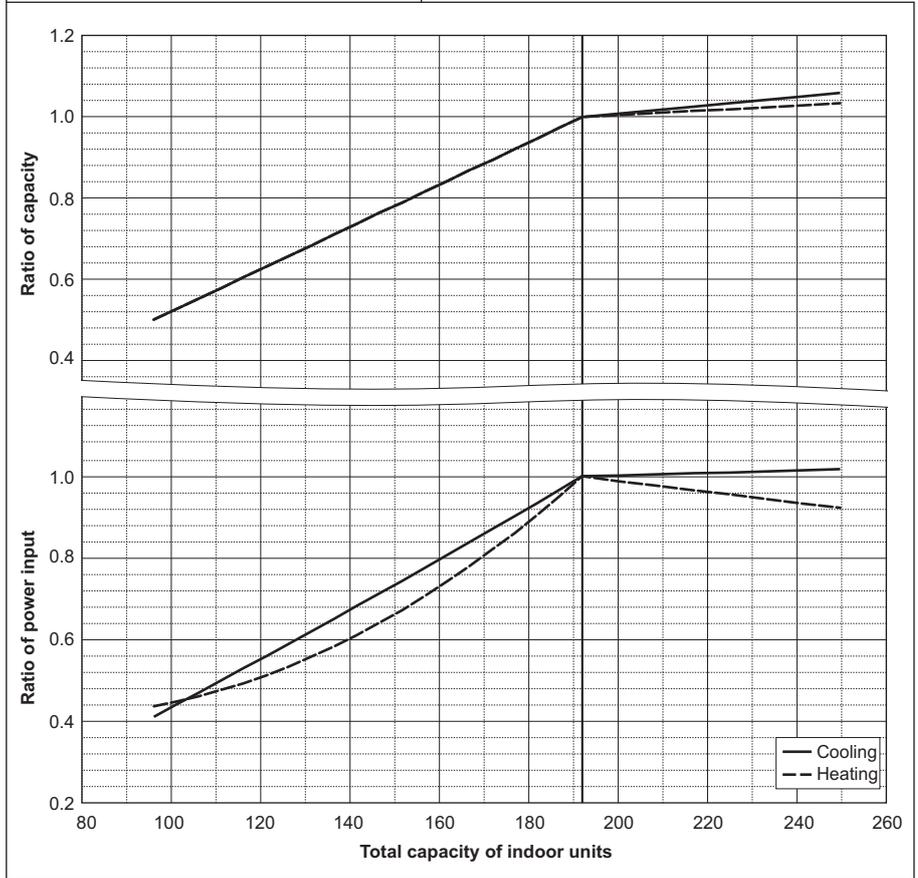
PQHY-		P192ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	192,000	
	kW	56.3	
Input	kW	11.30	
	BTU/h	183,000	
Rated cooling capacity	kW	53.6	
	Input kW	10.40	10.98

PQHY-		P192ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	215,000	
	kW	63.0	
Input	kW	11.02	
	BTU/h	205,000	
Rated Heating capacity	kW	60.1	
	Input kW	10.16	8.90

PQHY-P168Z(S)LMU-A



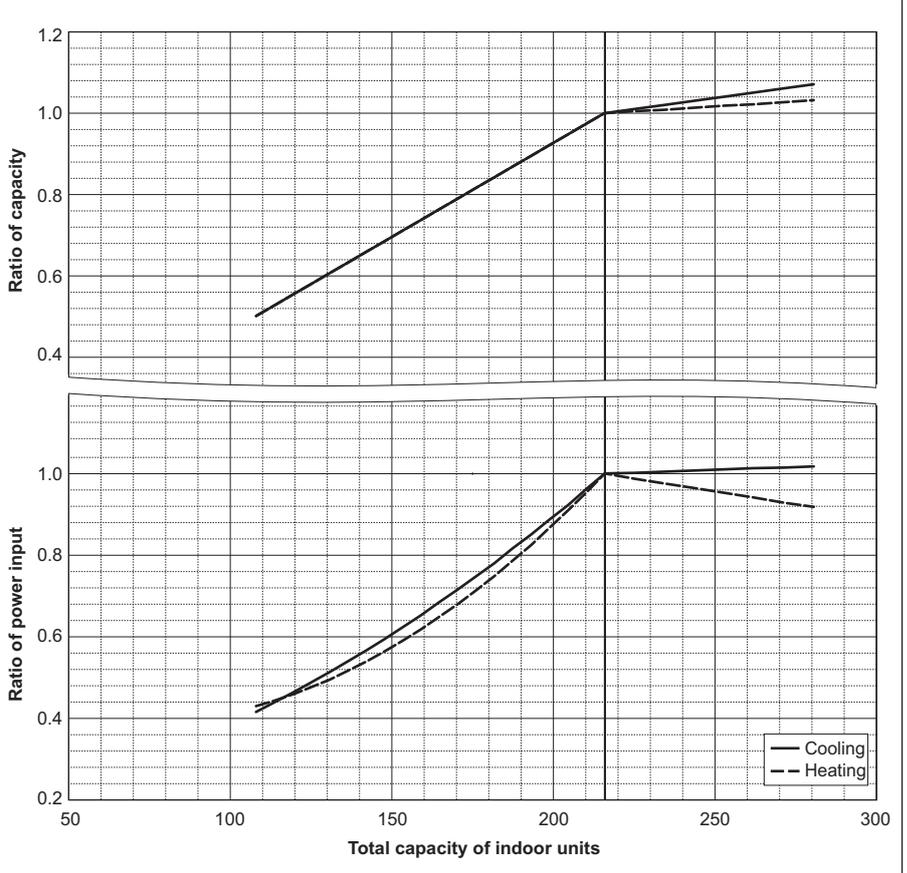
PQHY-P192Z(S)LMU-A



PQHY-		P216ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	216,000	
	kW	63.3	
Input	kW	14.03	
	BTU/h	206,000	
Rated cooling capacity	kW	60.4	
	Input kW	12.93	13.24

PQHY-		P216ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	243,000	
	kW	71.2	
Input	kW	12.88	
	BTU/h	232,000	
Rated Heating capacity	kW	68.0	
	Input kW	11.88	10.35

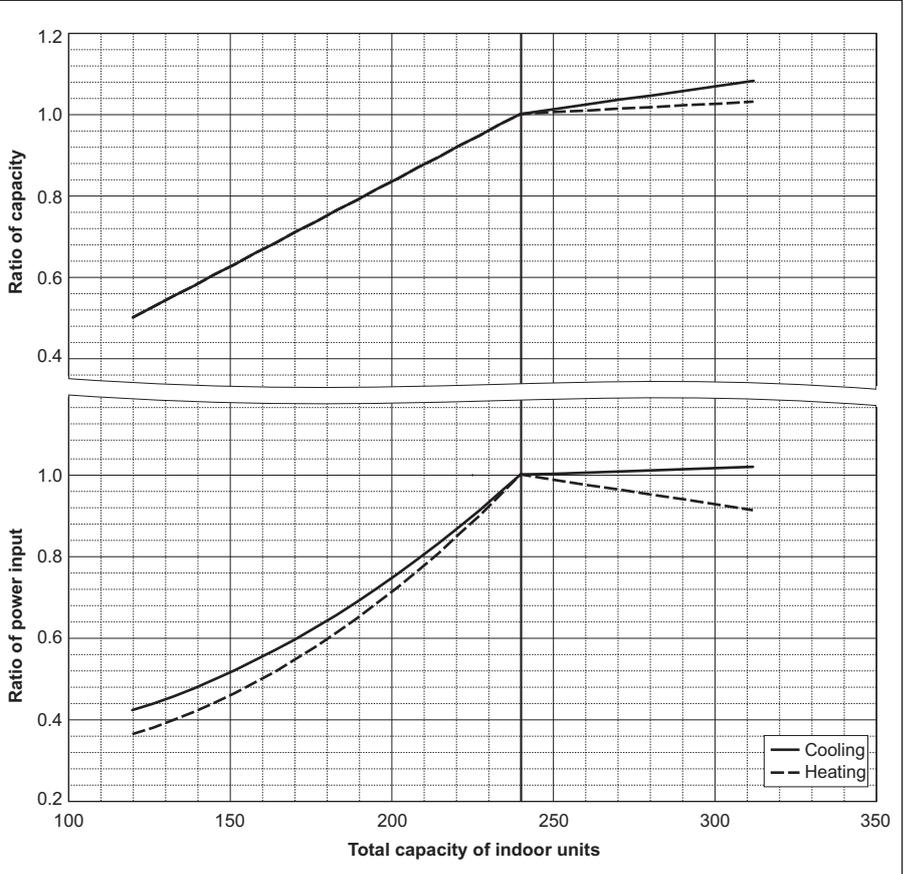
PQHY-P216Z(S)LMU-A



PQHY-		P240ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	240,000	
	kW	70.3	
Input	kW	16.89	
	BTU/h	228,000	
Rated cooling capacity	kW	66.8	
	Input kW	15.57	16.15

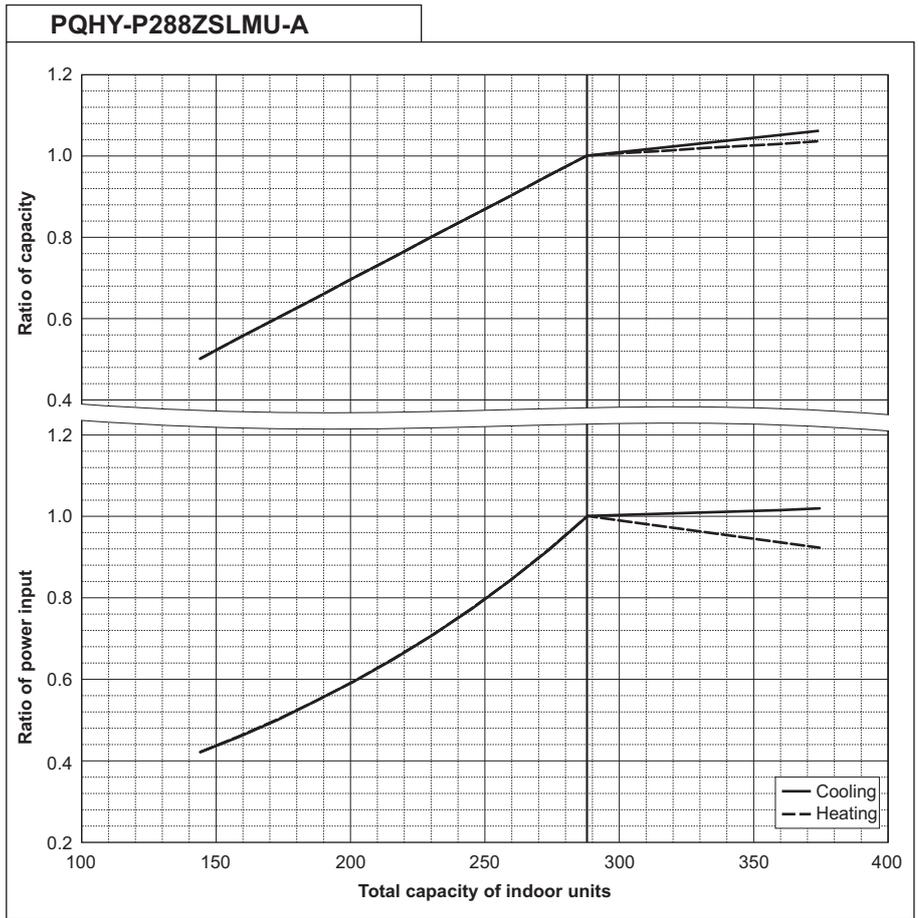
PQHY-		P240ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	270,000	
	kW	79.1	
Input	kW	14.58	
	BTU/h	258,000	
Rated Heating capacity	kW	75.6	
	Input kW	13.45	12.02

PQHY-P240Z(S)LMU-A



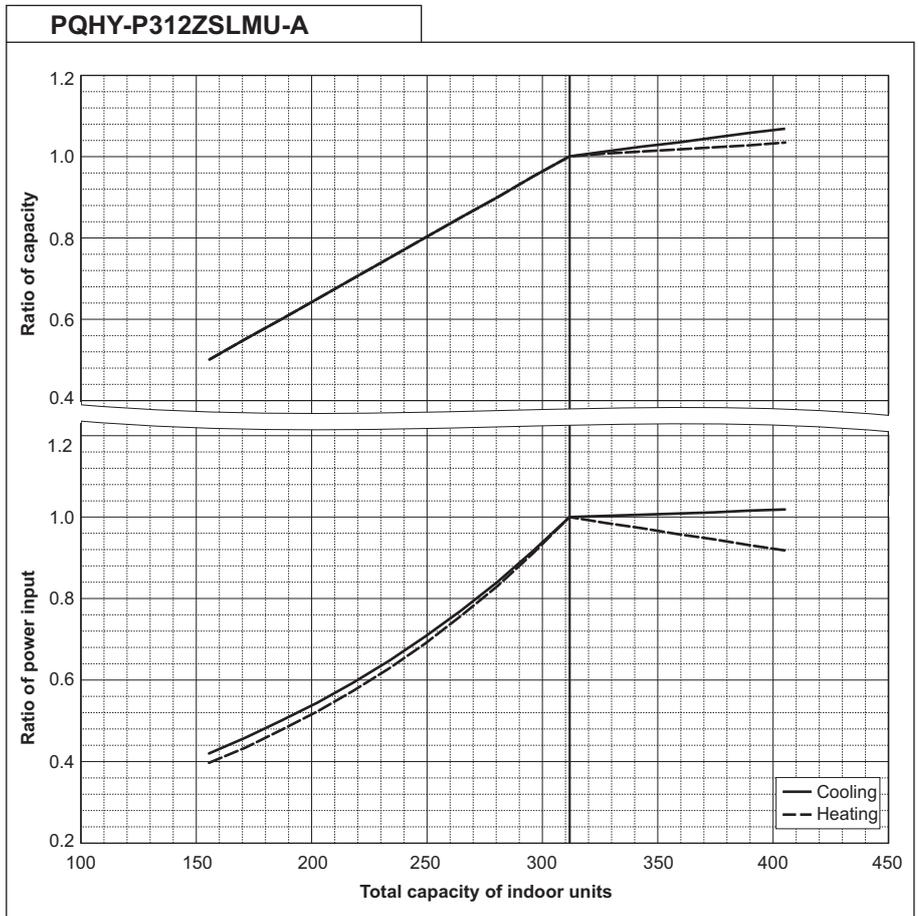
PQHY-		P288ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	288,000	
	kW	84.4	
Input	kW	20.42	
	BTU/h	275,000	
Rated cooling capacity	kW	80.6	
	Input kW	18.82	21.43

PQHY-		P288ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	323,000	
	kW	94.7	
Input	kW	17.50	
	BTU/h	308,000	
Rated Heating capacity	kW	90.3	
	Input kW	16.13	16.05



PQHY-		P312ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	312,000	
	kW	91.4	
Input	kW	23.41	
	BTU/h	297,000	
Rated cooling capacity	kW	87.0	
	Input kW	21.59	23.67

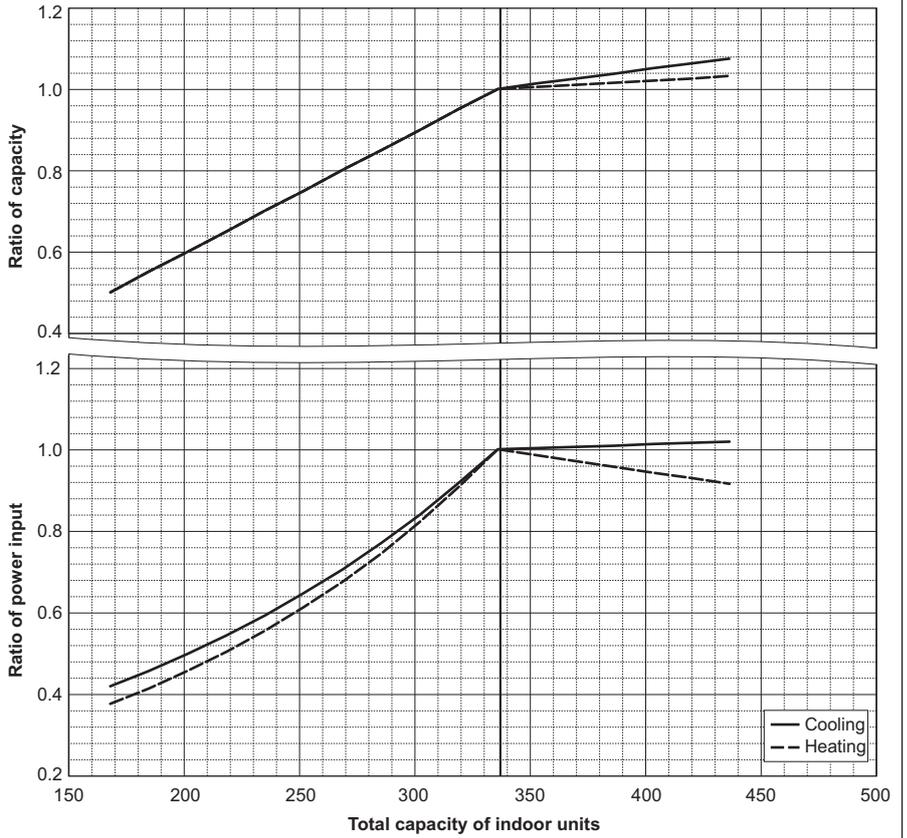
PQHY-		P312ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	350,000	
	kW	102.6	
Input	kW	19.11	
	BTU/h	334,000	
Rated Heating capacity	kW	97.9	
	Input kW	17.62	17.96



PQHY-		P336ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	336,000	
	kW	98.5	
Input	kW	26.84	
	BTU/h	320,000	
Rated cooling capacity	kW	93.8	
	Input kW	24.76	25.85

PQHY-		P336ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	378,000	
	kW	110.8	
Input	kW	20.77	
	BTU/h	361,000	
Rated Heating capacity	kW	105.8	
	Input kW	19.16	20.05

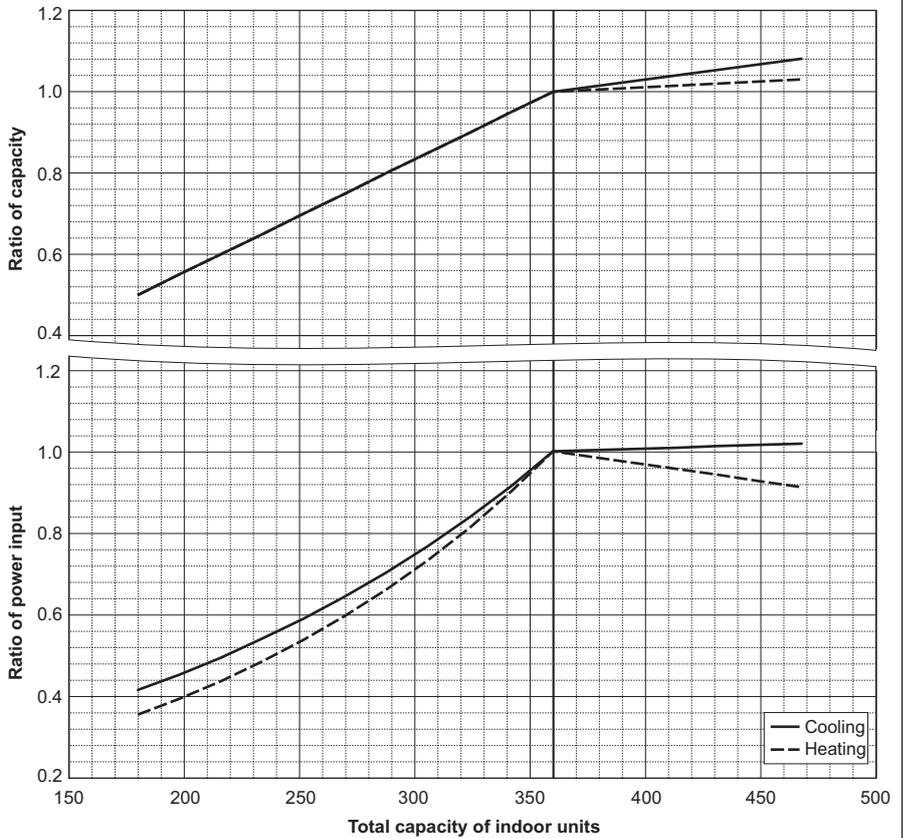
PQHY-P336ZSLMU-A



PQHY-		P360ZSLMU	
		Non-Ducted	Ducted
Nominal cooling capacity	BTU/h	360,000	
	kW	105.5	
Input	kW	29.43	
	BTU/h	342,000	
Rated cooling capacity	kW	100.2	
	Input kW	27.17	27.41

PQHY-		P360ZSLMU	
		Non-Ducted	Ducted
Nominal Heating capacity	BTU/h	405,000	
	kW	118.7	
Input	kW	22.85	
	BTU/h	387,000	
Rated Heating capacity	kW	113.4	
	Input kW	21.09	21.70

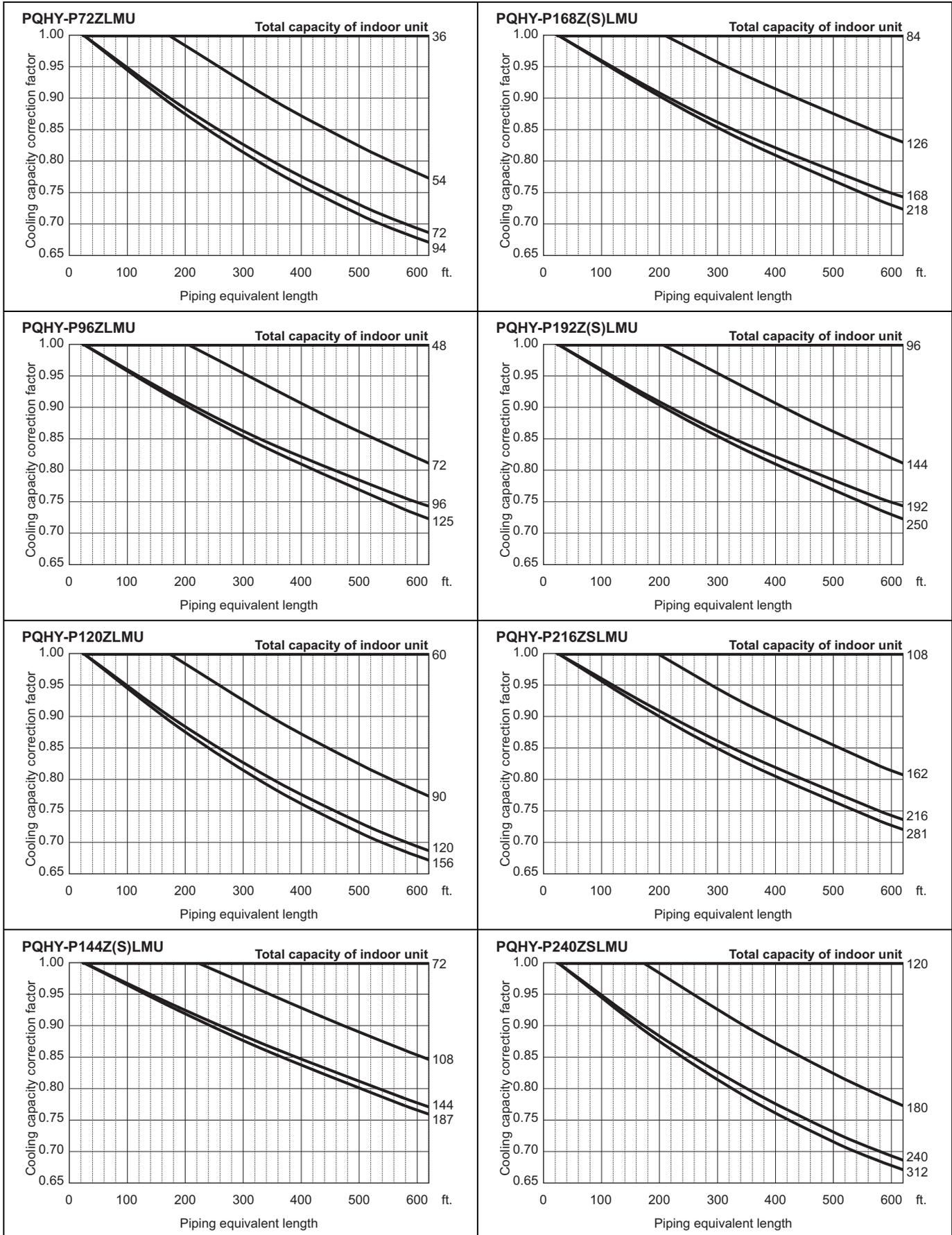
PQHY-P360ZSLMU-A

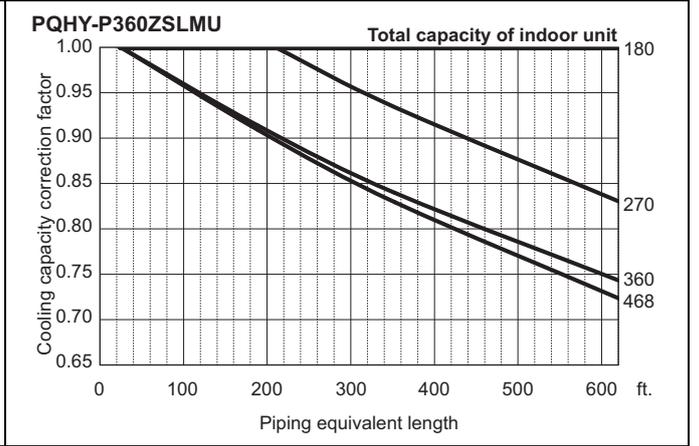
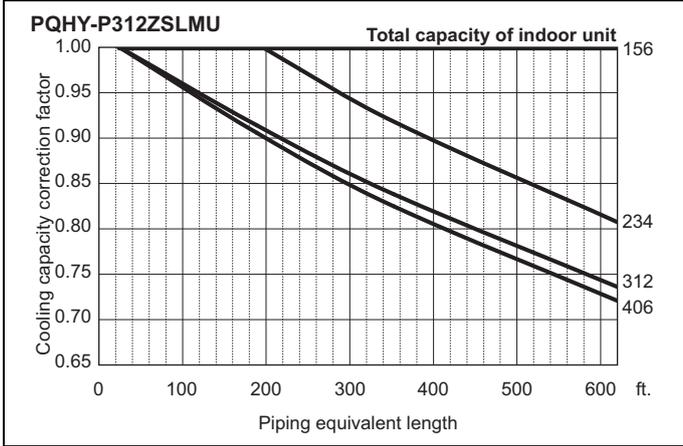
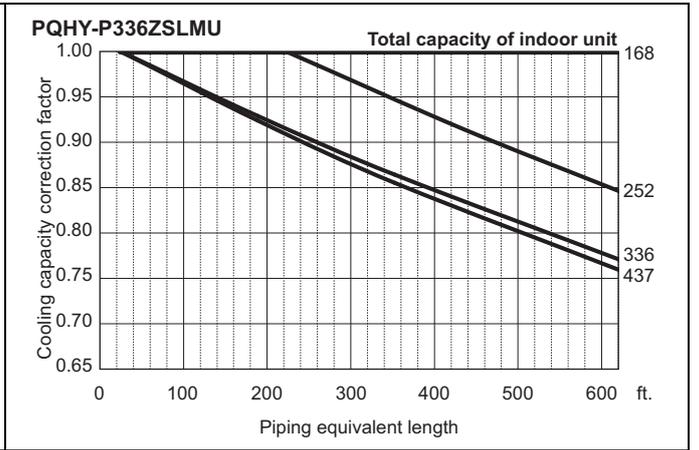
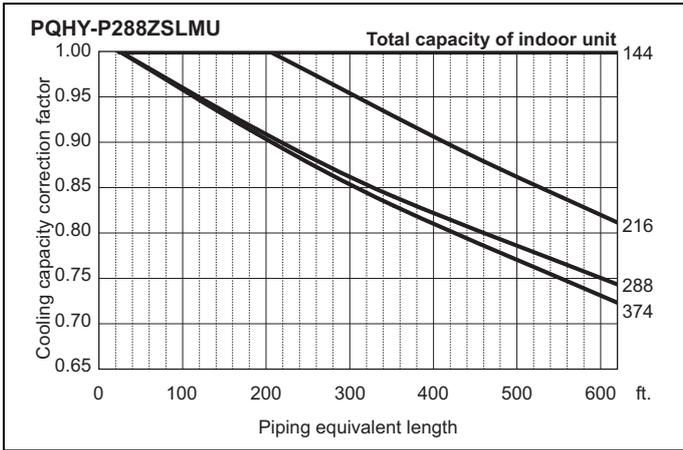


7-3. Correction by refrigerant piping length

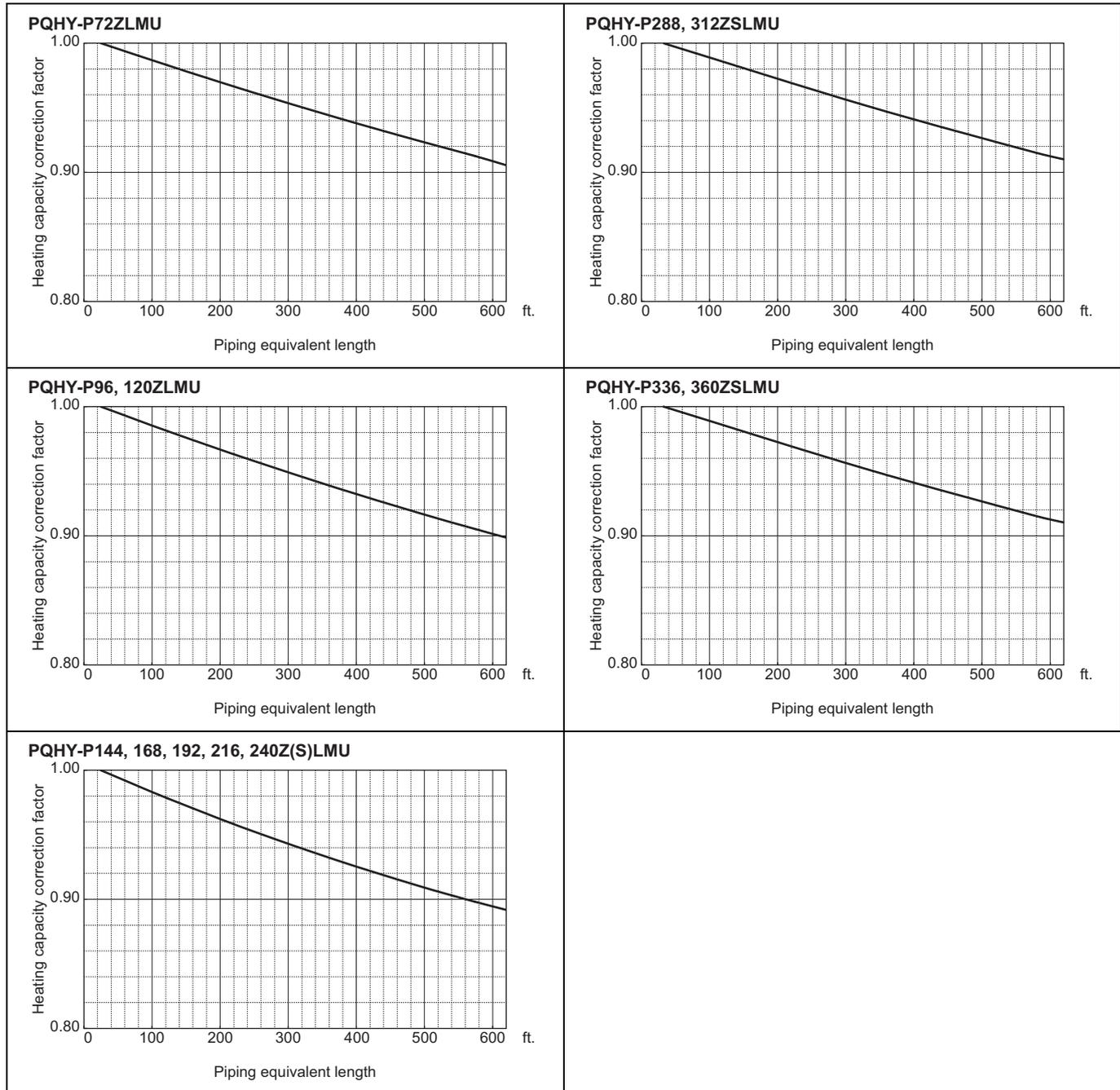
CITY MULTI system can extend the piping flexibly within its limitation for the actual situation. However, a decrease of cooling/heating capacity could happen correspondently. Using following correction factor according to the equivalent length of the piping shown at 7-3-1 and 7-3-2, the capacity can be observed. 7-3-3 shows how to obtain the equivalent length of piping.

7-3-1. Cooling capacity correction





7-3-2. Heating capacity correction



7-3-3. How to obtain the equivalent piping length

1. PQHY-P72ZLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.15 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.35 x number of bent on the piping) [m]

2. PQHY-P96, 120ZLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.38 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.42 x number of bent on the piping) [m]

3. PQHY-P144, 168, 192, 216, 240Z(S)LMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (1.64 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.50 x number of bent on the piping) [m]

4. PQHY-P288, 312ZSLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (2.30 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.70 x number of bent on the piping) [m]

5. PQHY-P336, 360ZSLMU

Equivalent length = (Actual piping length to the farthest indoor unit) + (2.63 x number of bent on the piping) [ft.]

Equivalent length = (Actual piping length to the farthest indoor unit) + (0.80 x number of bent on the piping) [m]

8-1. Designing of water circuit system

1) Example of basic water circuit

The water circuit of the water heat source CITY MULTI connects the heat source unit with the cooling tower/auxiliary heat source/heat storage tank/circulation pump with a single system water piping as shown in the figure below. The selector valve automatically controls to circulate water toward the cooling tower in the cooling season, while toward the heat storage tank in the heating season. If the circulation water temperature is kept in a range of 10~45°C [50~113°F]* regardless of the building load, the water heat source CITY MULTI can be operated for either cooling or heating. Therefore in the summer when only cooling load exists, the temperature rise of circulation water will be suppressed by operating the cooling tower. While in the winter when heating load increases, the temperature of circulation water may be dropped below 10°C [50°F]. Under such situation, the circulation water will be heated with the auxiliary heat source if it drops below a certain temperature.

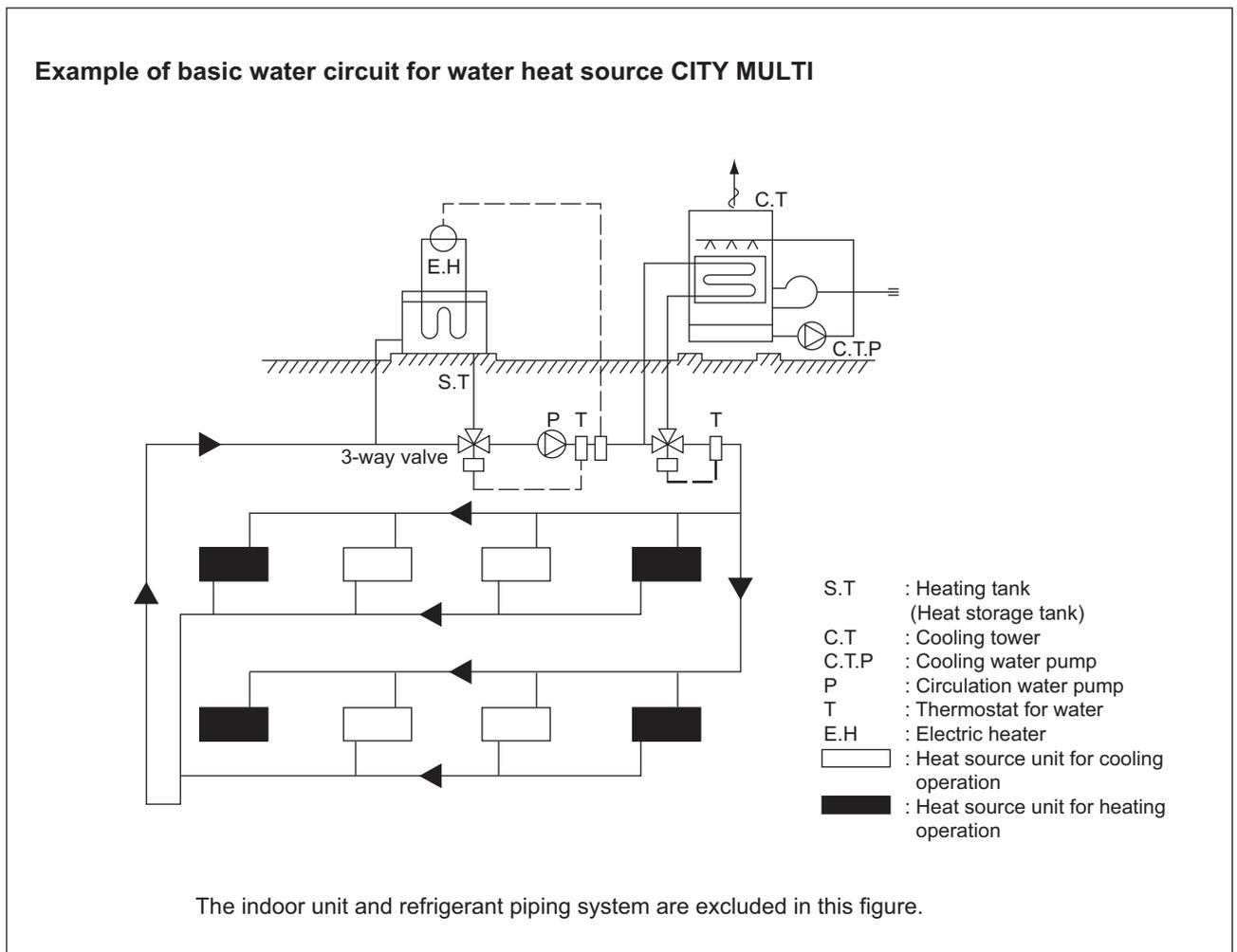
When the thermal balance between cooling and heating operation is in a correct proportion, the operation of the auxiliary heat source and cooling tower is not required.

In order to control the above thermal balance properly and use thermal energy effectively, utilizing of heat storage tanks, and night-time discounted electric power as a auxiliary heat source will be economical.

Meantime as this system uses plural sets of heat source unit equipped with water heat exchangers, water quality control is important. Therefore it is recommended to use closed type cooling towers as much as possible to prevent the circulation water from being contaminated.

When open type cooling towers are used, it is essential to provide proper maintenance control such as that to install water treatment system to prevent troubles caused by contaminated circulation water.

*10~45°C [50~113°F] : 50%~130% of indoor units can be connected



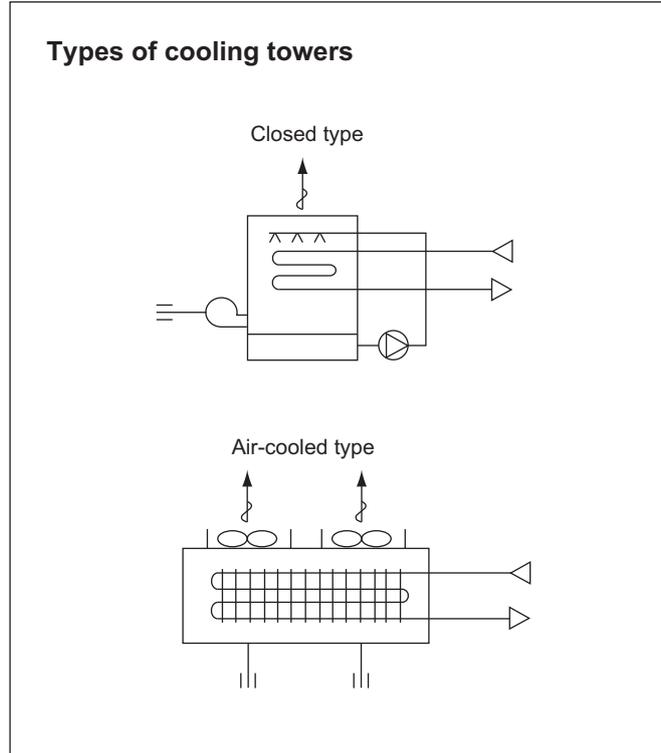
2) Cooling tower
a) Types of cooling tower

The cooling towers presently used include the open type cooling tower, open type cooling tower + heat exchanger, closed type cooling tower, and air-cooled type cooling tower. However, as the quality control of circulation water is essential when units are installed in decentralized state inside a building, the closed type cooling tower is generally employed in such case.

Although the circulation water will not be contaminated by atmospheric air, it is recommended to periodically blow water inside the system and replenish fresh water instead.

In a district where the coil may be frozen in the winter, it is necessary to apply antifreeze solution to the circulation water, or take freeze protection measures such as to automatically discharge water inside the cooling coil at the stopping of the pump.

When the open type cooling tower is used, be sure to install a water quality control device in addition to the freeze protection measures, as the water may be deteriorated by atmospheric contaminants entered into the cooling tower and dissolved into the circulation water.



b) Calculation method of cooling tower capacity

All units of the water heat source CITY MULTI may possibly be in cooling operation temporarily (at pulling down) in the summer, however, it is not necessary to determine the capacity according to the total cooling capacity of all CITY MULTI units as this system has a wide operating water temperature range (10~45°C) [50~113°F].

It is determined in accordance with the value obtained by adding the maximum cooling load of an actual building, the input heat equivalent value of all CITY MULTI units, and the cooling load of the circulating pumps. Please check for the values of the cooling water volume and circulation water volume.

$$\text{Cooling tower capacity} = \frac{Q_c + 860 \times (\Sigma Q_w + P_w)}{3,900} \quad (\text{Refrigeration ton})$$

- Q_c : Maximum cooling load under actual state (kcal/h)
- Q_w : Total input of water heat source CITY MULTI at simultaneous operation under maximum state (kW)
- P_w : Shaft power of circulation pumps (kW)

$$\left[\text{Cooling tower capacity} = \frac{Q_c + 3,412 \times (\Sigma Q_w + P_w)}{15,500} \quad (\text{Refrigeration ton}) \right]$$

- Q_c : Maximum cooling load under actual state (BTU/h)
- Q_w : Total input of water heat source CITY MULTI at simultaneous operation under maximum state (kW)
- P_w : Shaft power of circulation pumps (kW)

* 1 Refrigerant ton of cooling tower capacity ≈ US refrigerant ton × (1 + 0.3)
= 3,900 kcal/h = 15,500 BTU/h

3) Auxiliary heat source and heat storage tank

When the heating load is larger than the cooling load, the circulation water temperature lowers in accordance with the heat balance of the system. It should be heated by the auxiliary heat source in order to keep the inlet water temperature within the operating range (10°C [50°F] or more) of the water heat source CITY MULTI.

Further in order to operate the water heat source CITY MULTI effectively, it is recommended to utilize the heat storage tank to cover the warming up load in the morning and the insufficient heat amount.

Effective heat utilization can be expected to cover insufficient heat at the warming up in the next morning or peak load time by storing heat by installing a heat storage tank or operating a low load auxiliary heat source at the stopping of the water heat source CITY MULTI. As it can also be possible to reduce the running cost through the heat storage by using the discounted night-time electric power, using both auxiliary heat source and heat storage tank together is recommended. The effective temperature difference of an ordinary heat storage tank shows about 5°C [41°F] even with the storing temperature at 45°C [113°F].

However with the water heat source CITY MULTI, it can be utilized as heating heat source up to 15°C [59°F] with an effective temperature of a high 30°C [54°F] approximately, thus the capacity of the heat storage tank can be minimized.

a) Auxiliary heat source

The following can be used as the auxiliary heat source.

- Boiler (Heavy oil, kerosine, gas, electricity)
- Electric heat (Insertion of electric heater into heat storage tank)
- Outdoor air (Air-heat source heat pump chiller)
- Warm discharge water (Exhaust water heat from machines inside building and hot water supply)
- Utilization of night-time lighting
- Solar heat

Please note that the auxiliary heat source should be selected after studying your operating environment and economical feasibility.

Determining the auxiliary heat source capacity

For the CITY MULTI water heat source system, a heat storage tank is recommended to use. When employment of the heat storage tank is difficult, the warming up operation should be arranged to cover the starting up heating load. Since the holding water inside the piping circuit owns heat capacity and the warming up operation can be assumed for about one hour except that in a cold region, the heat storage tank capacity is required to be that at the maximum daily heating load including the warming up load at the next morning of the holiday. However the auxiliary heat source capacity should be determined by the daily heating load including warming up load on the week day.

For the load at the next morning of the holiday, heat storage is required by operating the auxiliary heat source even outside of the ordinary working hour.

When heat storage tank is not used

$$QH = HCT \left(1 - \frac{1}{COP_h} \right) - 1000 \times V_w \times \Delta T - 860 \times P_w$$

QH	: Auxiliary heat source capacity	(kcal/h)
HCT	: Total heating capacity of each water heat source CITY MULTI	(kcal/h)
COP _H	: COP of water heat source CITY MULTI at heating	
V _w	: Holding water volume inside piping	(m ³)
ΔT	: Allowable water temperature drop = T _{WH} - T _{WL}	(°C)
T _{WH}	: Heat source water temperature at high temperature side	(°C)
T _{WL}	: Heat source water temperature at low temperature side	(°C)
P _w	: Heat source water pump shaft power	(kW)

$$QH = HCT \left(1 - \frac{1}{COP_h} \right) - 8.343 \times V_w \times \Delta T - 3412 \times P_w$$

QH	: Auxiliary heat source capacity	(BTU/h)
HCT	: Total heating capacity of each water heat source CITY MULTI	(BTU/h)
COP _H	: COP of water heat source CITY MULTI at heating	
V _w	: Holding water volume inside piping	(G)
ΔT	: Allowable water temperature drop = T _{WH} - T _{WL}	(°F)
T _{WH}	: Heat source water temperature at high temperature side	(°F)
T _{WL}	: Heat source water temperature at low temperature side	(°F)
P _w	: Heat source water pump shaft power	(kW)

When heat storage tank is not used

$$QH = \frac{HQ_{1T} \cdot \left(1 - \frac{1}{COP_h} \right) - 860 \times P_w \times T_2}{T_1} \times K \quad (\text{kcal})$$

QH _{1T}	: Total of heating load on weekday including warming up	(kcal/day)
T ₁	: Operating hour of auxiliary heat source	(h)
T ₂	: Operating hour of heat source water pump	(h)
K	: Allowance factor (Heat storage tank, piping loss, etc.)	1.05~1.10

HQ_{1T} is calculated from the result of steady state load calculation similarly by using the equation below.

$$HQ_{1T} = 1.15 \times (\Sigma Q'a + \Sigma Q'b + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f) T_2 - \Psi (\Sigma Qe_1 + \Sigma Qe_2 + \Sigma Qe_3) (T_2 - 1)$$

Q'a	: Thermal load from external wall/roof in each zone	(kcal/h)
Q'b	: Thermal load from glass window in each zone	(kcal/h)
Q'c	: Thermal load from partition/ceiling/floor in each zone	(kcal/h)
Q'd	: Thermal load by infiltration in each zone	(kcal/h)
Q'f	: Fresh outdoor air load in each zone	(kcal/h)
Q'e ₁	: Thermal load from human body in each zone	(kcal/h)
Q'e ₂	: Thermal load from lighting fixture in each zone	(kcal/h)
Q'e ₃	: Thermal load from equipment in each zone	(kcal/h)
Ψ	: Radiation load rate	0.6~0.8
T ₂	: Air conditioning hour	

$$QH = \frac{HQ_{1T} \cdot \left(1 - \frac{1}{COP_h} \right) - 3,412 \times P_w \times T_2}{T_1} \times K \quad (\text{BTU})$$

QH _{1T}	: Total of heating load on weekday including warming up	(BTU/day)
T ₁	: Operating hour of auxiliary heat source	(h)
T ₂	: Operating hour of heat source water pump	(h)
K	: Allowance factor (Heat storage tank, piping loss, etc.)	1.05~1.10

HQ_{1T} is calculated from the result of steady state load calculation similarly by using the equation below.

$$HQ_{1T} = 1.15 \times (\Sigma Q'a + \Sigma Q'b + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f) T_2 - \Psi (\Sigma Qe_1 + \Sigma Qe_2 + \Sigma Qe_3) (T_2 - 1)$$

Q'a	: Thermal load from external wall/roof in each zone	(BTU/h)
Q'b	: Thermal load from glass window in each zone	(BTU/h)
Q'c	: Thermal load from partition/ceiling/floor in each zone	(BTU/h)
Q'd	: Thermal load by infiltration in each zone	(BTU/h)
Q'f	: Fresh outdoor air load in each zone	(BTU/h)
Q'e ₁	: Thermal load from human body in each zone	(BTU/h)
Q'e ₂	: Thermal load from lighting fixture in each zone	(BTU/h)
Q'e ₃	: Thermal load from equipment in each zone	(BTU/h)
Ψ	: Radiation load rate	0.6~0.8
T ₂	: Air conditioning hour	

b) Heat storage tank

Heat storage tank can be classified by types into the open type heat storage tank exposed to atmosphere, and the closed type heat storage tank with structure separated from atmosphere. Although the size of the tank and its installation place should be taken into account, the closed type tank is being usually employed by considering corrosion problems.

The capacity of heat storage tanks is determined in accordance with the daily maximum heating load that includes warming up load to be applied for the day after the holiday.

When auxiliary heat source is operated during operation and even after stopping of water heat source CITY MULTI unit

$$V = \frac{HQ_{2T} \left(1 - \frac{1}{COP_h} \right) - 860 \times P_w \times T_2 - Q_H \times T_2}{\Delta T \times 1,000 \times \eta V} \quad (\text{ton})$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (kcal/day)
 ΔT : Temperature difference utilized by heat storage tank (°C)
 ηV : Heat storage tank efficiency

$$HQ_{2T} : 1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f) T_2 - \psi (\Sigma Qe2 + \Sigma Qe3) (T_2 - 1)$$

$$V = \frac{HQ_{2T} \left(1 - \frac{1}{COP_h} \right) - 3,412 \times P_w \times T_2 - Q_H \times T_2}{\Delta T \times \eta V} \quad (\text{lbs})$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (BTU/day)
 ΔT : Temperature difference utilized by heat storage tank (°F)
 ηV : Heat storage tank efficiency

$$HQ_{2T} : 1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f) T_2 - \psi (\Sigma Qe2 + \Sigma Qe3) (T_2 - 1)$$

When auxiliary heat source is operated after stopping of water heat source CITY MULTI unit

$$V = \frac{HQ_{2T} \left(1 - \frac{1}{COP_h} \right) - 860 \times P_w \times T_2}{\Delta T \times 1,000 \times \eta V} \quad (\text{ton})$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (kcal/day)
 ΔT : Temperature difference utilized by heat storage tank (°C)
 ηV : Heat storage tank efficiency

$$HQ_{2T} : 1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f) T_2 - \psi (\Sigma Qe2 + \Sigma Qe3) (T_2 - 1)$$

$$V = \frac{HQ_{2T} \left(1 - \frac{1}{COP_h} \right) - 3,412 \times P_w \times T_2}{\Delta T \times \eta V} \quad (\text{lbs})$$

HQ_{2T} : Maximum heating load including load required for the day after the holiday (BTU/day)
 ΔT : Temperature difference utilized by heat storage tank (°F)
 ηV : Heat storage tank efficiency

$$HQ_{2T} : 1.3 \times (\Sigma Q'a + \Sigma Q'c + \Sigma Q'd + \Sigma Q'f) T_2 - \psi (\Sigma Qe2 + \Sigma Qe3) (T_2 - 1)$$

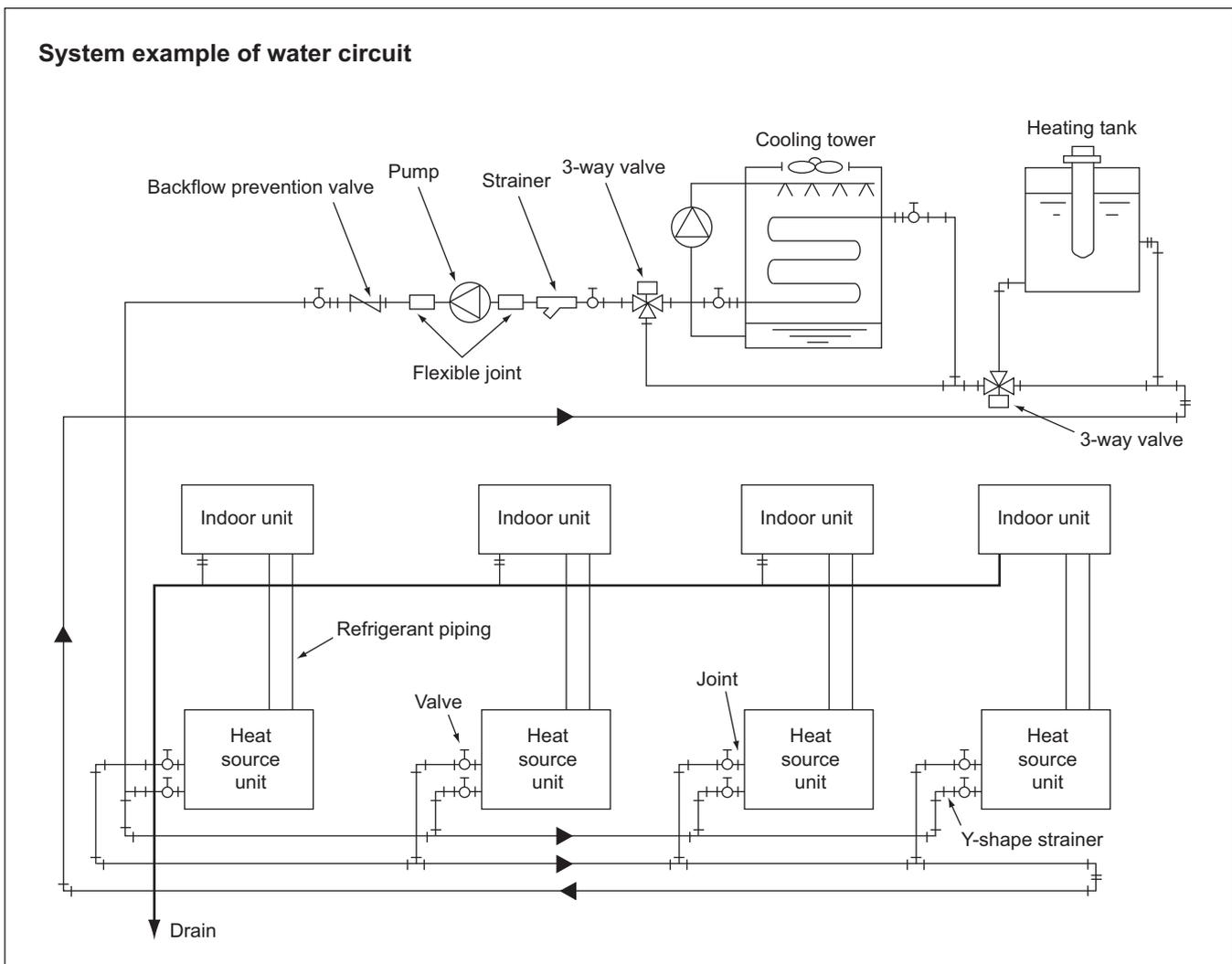
4) Piping system

The following items should be kept in your mind in planning / designing water circuits.

- a) All units should be constituted in a single circuit in principle.
- b) When plural numbers of the water heat source CITY MULTI unit are installed, the rated circulating water flow rate should be kept by making the piping resistance to each unit almost same value. As an example, the reverse return system as shown below may be employed.
- c) Depending on the structure of a building, the water circuit may be prefabricated by making the layout uniform.
- d) When a closed type piping circuit is constructed, install an expansion tank usable commonly for a make-up water tank to absorb the expansion/contraction of water caused by temperature fluctuation.
- e) If the operating temperature range of circulation water stays within the temperature near the normal temperature (summer :29.4°C [85°F], winter :21.1°C [70°F]), thermal insulation or anti-sweating work is not required for the piping inside buildings.

In case of the conditions below, however, thermal insulation is required.

- When well water is used for heat source water.
- When piped to outdoor or a place where freezing may be caused.
- When vapor condensation may be generated on piping due to an increase in dry bulb temperature caused by the entry of fresh outdoor air.



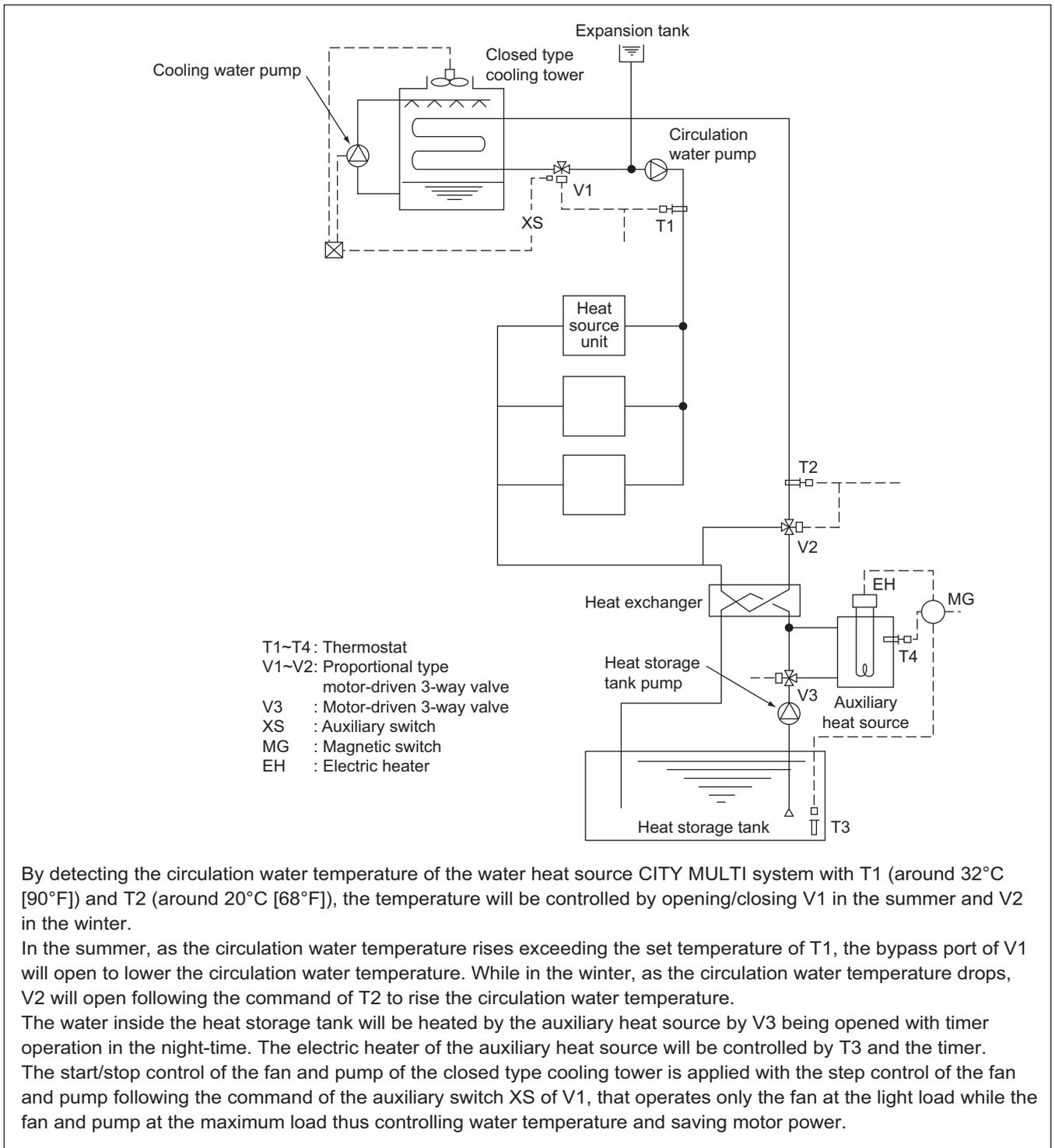
5) Practical System Examples and Circulation Water Control

Since the water heat source CITY MULTI is of water heat source system, versatile systems can be constituted by combining it with various heat sources.

The practical system examples are given below.

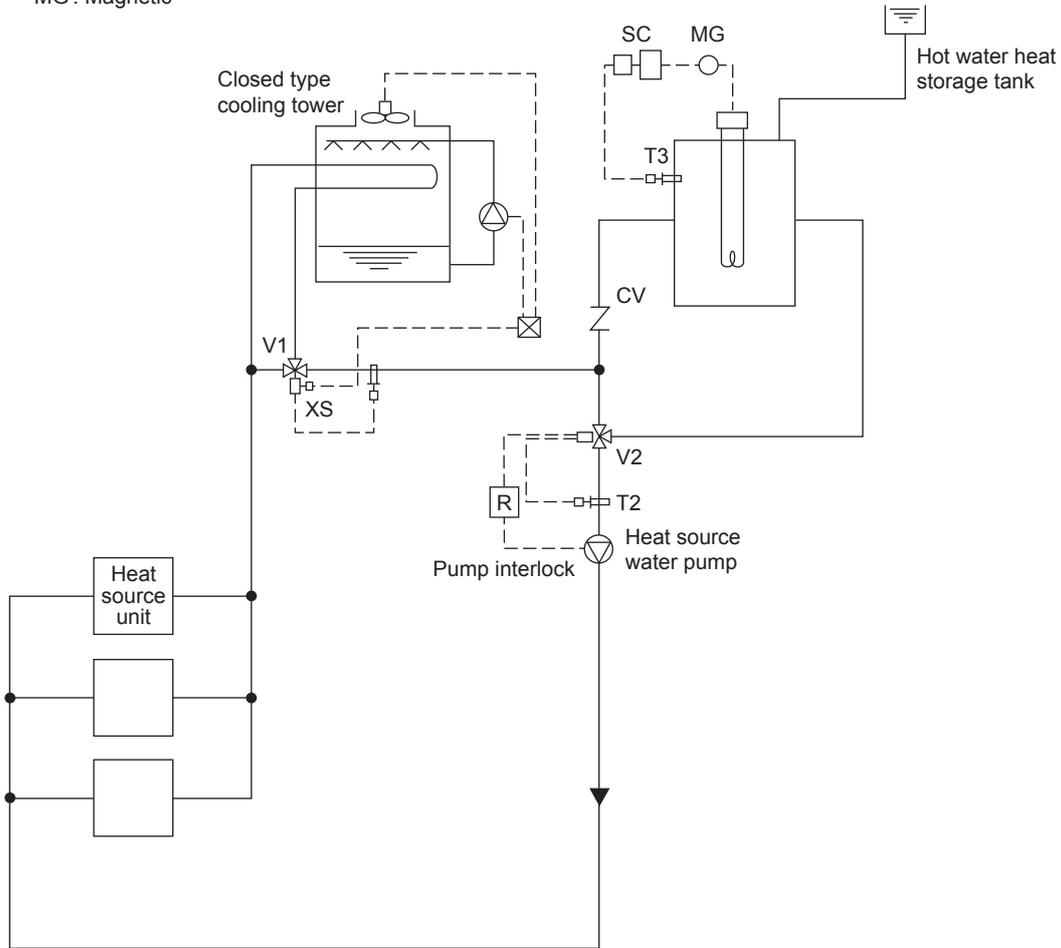
Either cooling or heating operation can be performed if the circulation water temperature of the water heat source CITY MULTI stays within a range of 10~45°C [50~113°F]. However, the circulation water temperature near 32°C [90°F] for cooling and 20°C [68°F] for heating is recommended by taking the life, power consumption and capacity of the air conditioning units into consideration. The detail of the control is also shown below.

Example-1 Combination of closed type cooling tower and hot water heat storage tank (using underground hollow slab)



Example-2 Combination of closed type cooling tower and hot water heat storage tank

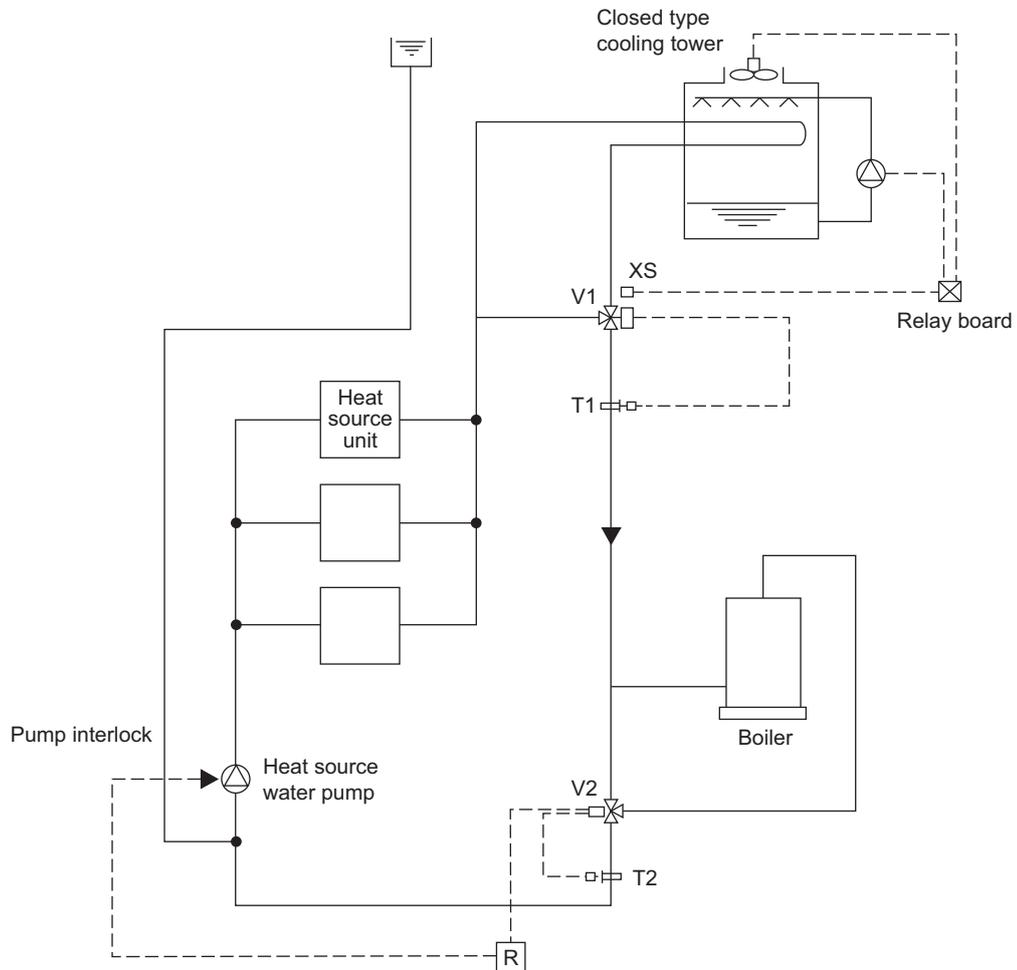
- T1 : Proportional type, insertion system thermostat
- T2 : Proportional type, insertion system thermostat
- T3 : Proportional type, insertion system thermostat
- V1 : Proportional type, motor-driven 3-way valve
- V2 : Proportional type, motor-driven 3-way valve
- XS : Auxiliary switch (Duplex switch type)
- SC : Step controller
- R : Relay
- MG : Magnetic



In the summer, as the circulation water temperature rises exceeding the set temperature of T1, the bypass port of V1 will open to lower the circulation water temperature. In the winter, if the circulation water temperature stays below 25°C [77°F], V2 will open/close by the command of T2 to keep the circulation water temperature constant. The temperature of the hot water inside the heat storage tank will be controlled through the step control of the electric heater by step controller operation following the command of T3. During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking thus preventing the high temperature water from entering into the system at the starting of the pump. The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control of the fan and pump following the command of the auxiliary switch XS of V1, that operates only the fan at the light load while the fan and pump at the maximum load thus controlling water temperature and saving motor power.

Example-3 Combination of closed type cooling tower and boiler

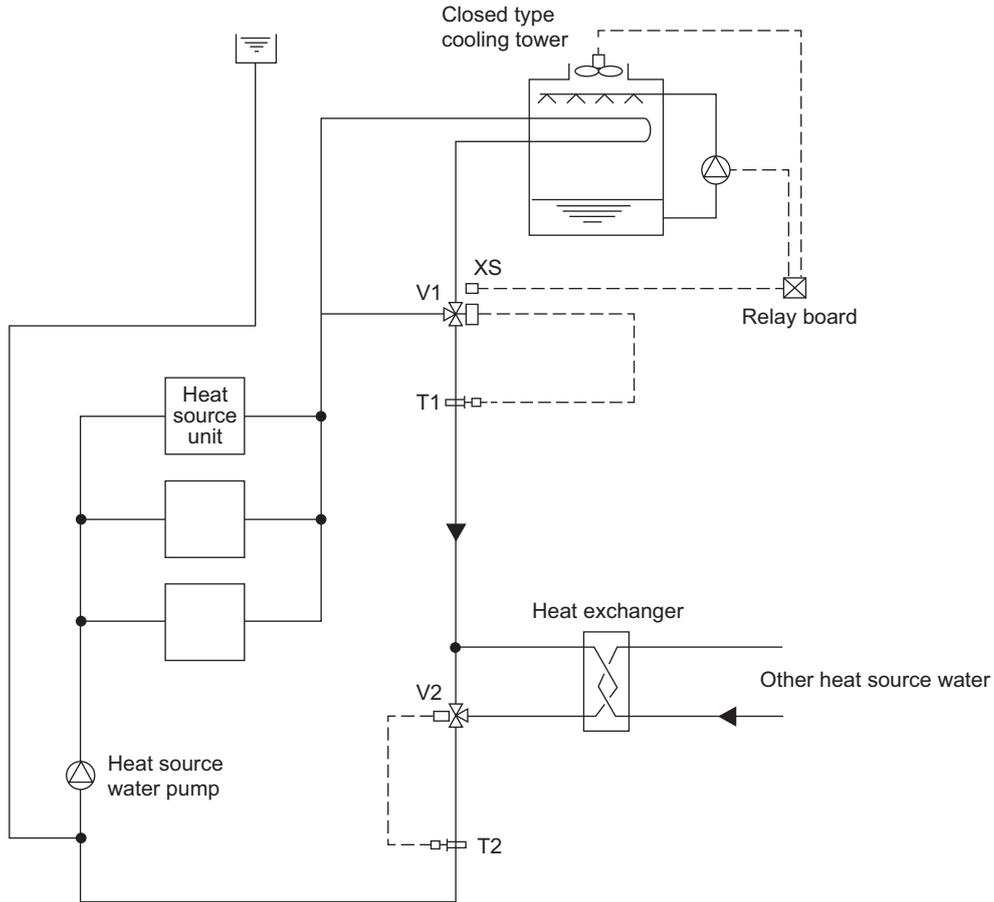
- T1 : Proportional type, insertion system thermostat
 T2 : Proportional type, insertion system thermostat
 T3 : Proportional type, insertion system thermostat
 V1 : Proportional type, motor-driven 3-way valve
 S : Selector switch
 R : Relay
 XS : Auxiliary switch (Duplex switch type)



In the summer, as the circulation water temperature rises exceeding the set temperature of T1, the bypass port of V1 will close to lower the circulation water temperature. In the winter, if the circulation water temperature drops below 25°C [77°F], V2 will conduct water temperature control to keep the circulation water temperature constant. During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking. The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control following the command of the auxiliary switch XS of V1, thus controlling water temperature and saving motor power.

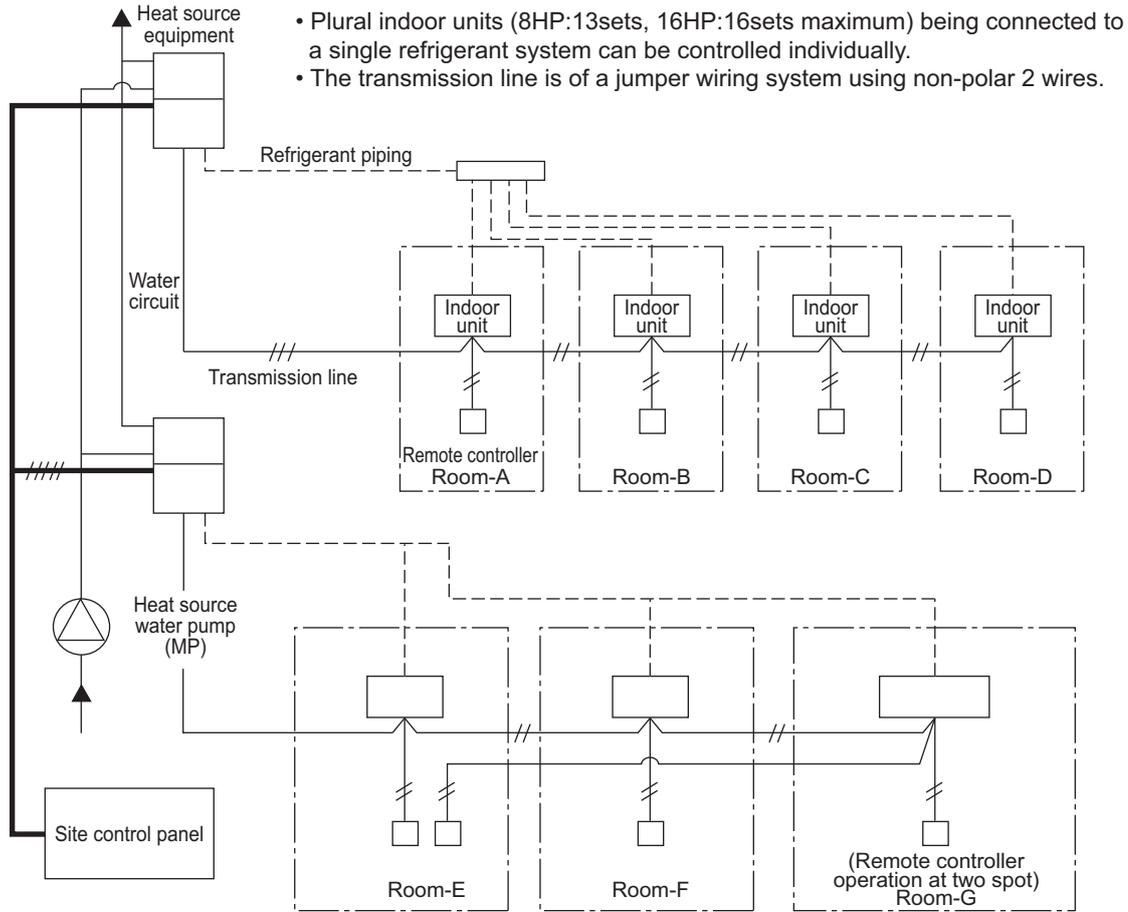
Example-4 Combination of closed type cooling tower and heat exchanger (of other heat source)

- T1 : Proportional type, insertion system thermostat
- T2 : Proportional type, insertion system thermostat
- V1 : Proportional type, motor-driven 3-way valve
- V2 : Proportional type, motor-driven 3-way valve
- S : Selector switch
- R : Relay
- XS : Auxiliary switch (Duplex switch type)



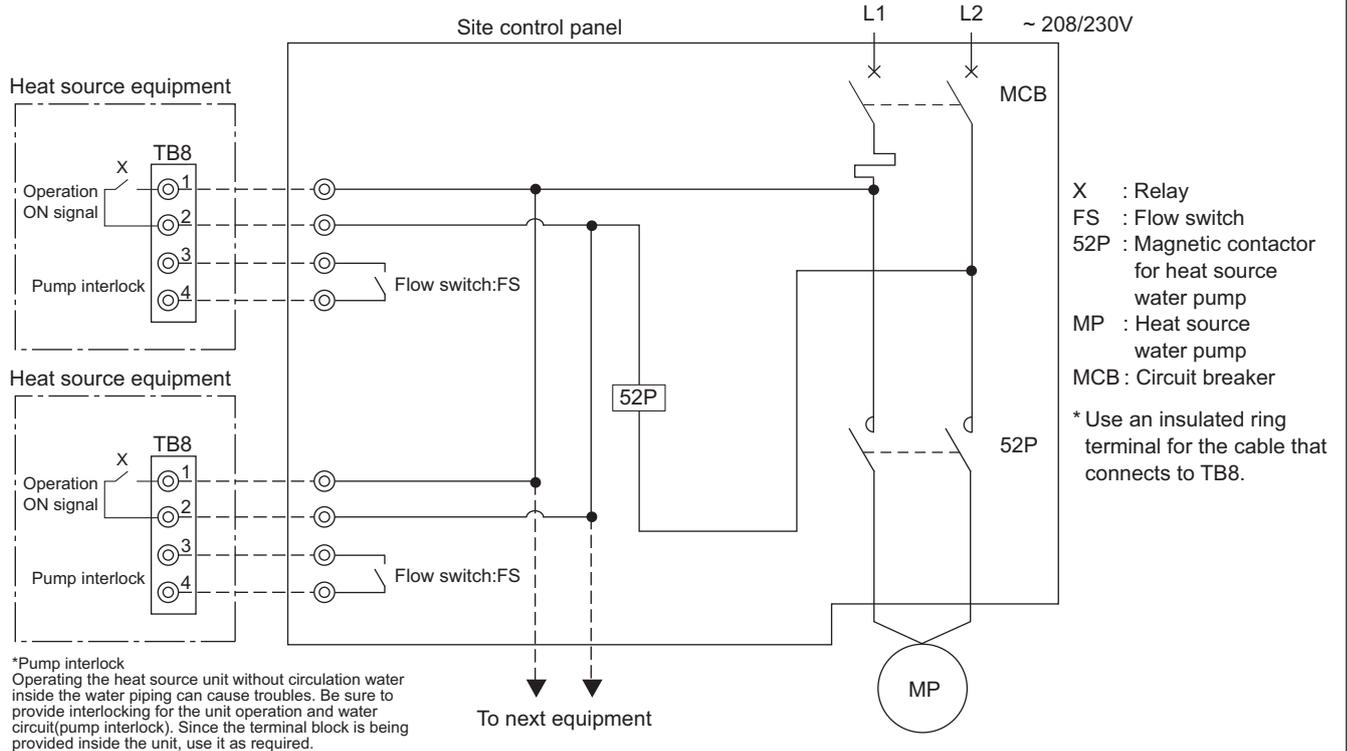
In the summer, as the circulation water temperature rises exceeding the set temperature of T1, the bypass port of V1 will close to lower the circulation water temperature. In the winter, if the circulation water temperature drops below 26°C [79°F], V2 will conduct water temperature control to keep the circulation water temperature constant. During the stopping of the heat source water pump, the bypass port of V2 will be closed fully by interlocking. The start/stop control of the fan and pump of the closed type cooling tower is applied with the step control following the command of the auxiliary switch XS of V1, thus controlling water temperature and saving motor power.

6) Pump interlock circuit



Wiring diagram

This circuit uses the "Terminal block for pump interlock (TB8)" inside the electrical parts box of the heat source equipment. This circuit is for interlocking of the heat source equipment operation and the heat source water pump.



*Pump interlock
 Operating the heat source unit without circulation water inside the water piping can cause troubles. Be sure to provide interlocking for the unit operation and water circuit(pump interlock). Since the terminal block is being provided inside the unit, use it as required.

Use the flow switch (FS)

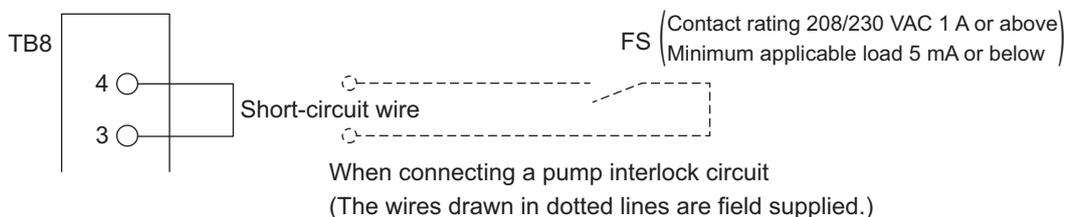
Operation ON signal

Terminal No.	TB8-1, 2																														
Output	Relay contacts output Rated voltage: 3~: 208/230V Rated load: 1 A																														
Operation	<ul style="list-style-type: none"> When setting No.917 for Dip switch 4 (Dip switch 6-10 is ON) is OFF. The relay closes during compressor operation. <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <th colspan="10">SW4 0: OFF, 1: ON</th> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td> </tr> <tr> <td>1</td><td>0</td><td>1</td><td>0</td><td>1</td><td>0</td><td>0</td><td>1</td><td>1</td><td>1</td> </tr> </table> <ul style="list-style-type: none"> When setting No.917 for Dip switch 4 (Dip switch 6-10 is ON) is ON. The relay closes during reception of cooling or the heating operation signal from the controller. (Note: It is output even if the thermostat is OFF (when the compressor is stopped).) 	SW4 0: OFF, 1: ON										1	2	3	4	5	6	7	8	9	10	1	0	1	0	1	0	0	1	1	1
SW4 0: OFF, 1: ON																															
1	2	3	4	5	6	7	8	9	10																						
1	0	1	0	1	0	0	1	1	1																						

Pump Interlock

Terminal No.	TB8-3, 4
Input	Level signal
Operation	If the circuit between TB8-3 and TB8-4 is open, compressor operation is prohibited.

*Remove the short circuit wire between 3 and 4 when wiring to TB8.
To prevent a false detection of error resulting from contact failure, use a flow switch with a minimum guaranteed current of 5 mA or below for FS.

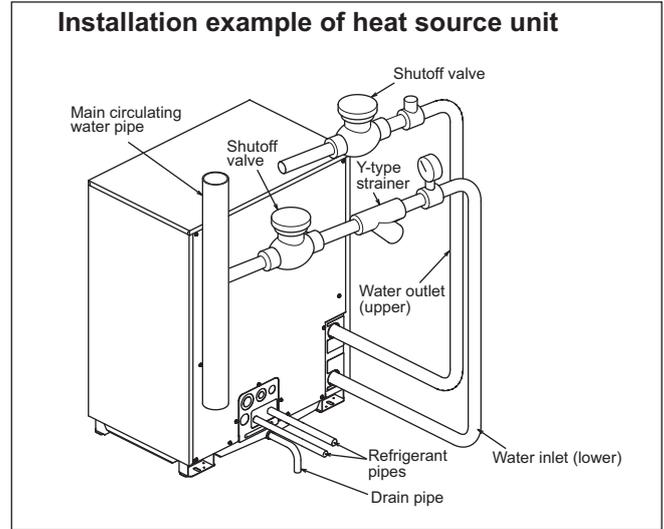


8-2. Water piping work

Although the water piping for the CITY MULTI WY system does not differ from that for ordinary air conditioning systems, pay special attention to the items below in conducting the piping work.

1) Items to be observed on installation work

- The water pressure resistance of the water pipes in the heat source unit is 2.0MPa [290psi].
- In order to equalize piping resistance for each unit, adapt the reverse return system.
- Mount a joint and a valve onto the water outlet/inlet of the unit to allow for maintenance, inspection and replacement work. Be sure to mount a strainer at the water inlet piping of the unit. (The strainer is required at the circulation water inlet to protect the heat source unit.)
- * The installation example of the heat source unit is shown right.
- Be sure to provide an air relief opening on the water piping properly, and purge air after feeding water to the piping system.
- Condensate will generate at the low temperature part inside the heat source equipment. Connect drain piping to the drain piping connection located at the bottom of the heat source equipment to discharge it outside the equipment.
- Mount a backflow prevention valve and a flexible joint for vibration control onto the pump.
- Provide a sleeve to the penetrating parts of the wall to prevent the piping.
- Fasten the piping with metal fitting, arrange the piping not to expose to cutting or bending force, and pay sufficient care for possible vibration.
- Be careful not to erroneously judge the position of the inlet and outlet of water.
(Lower position : Inlet, Upper position : Outlet)
- When connecting heat source unit water piping and water piping on site, apply liquid sealing material for water piping over the sealing tape before connection.
- This unit doesn't include a heater to prevent freezing within tubes. If the water flow is stopped on low ambient, drain the water out.
- The unused knockout holes should be closed and the refrigerant pipes, water pipes, power source and transmission wires access holes should be filled with putty.
- The drain plug is installed on the back of the unit at factory for field-connection of the drain pipes on the front of the unit. Move the plug to the front to connect the drain pipes on the back. Verify that there are no leaks from pipe connections.
- For installing two units, install water pipes in parallel to each other so that the water flow rate through both units will be equal.
- Wrap the sealing tape as follows.
 - ① Wrap the joint with sealing tape in the direction of the threads (clockwise), and do not let the tape run over the edge.
 - ② Overlap the sealing tape by two-thirds to three-fourths of its width on each turn. Press the tape with your fingers so that it is pressed firmly against each thread.
 - ③ Leave the 1.5th through 2nd farthest threads away from the pipe end unwrapped.
- Hold the pipe on the unit side in place with a spanner when installing the pipes or strainer. Tighten screws to a torque of 150N • m.



- A place where vapor condensation may be generated on piping due to an increase in dry bulb temperature inside the ceiling caused by the entry of fresh outdoor air
- Drain piping portions

3) Water treatment and water quality control

For the circulation water cooling tower of the CITY MULTI WY system, employment of the closed type is recommended to keep water quality. However, in the case that an open type cooling tower is employed or the circulating water quality is inferior, scale will adhere onto the water heat exchanger leading to the decreased heat exchange capacity or the corrosion of the heat exchanger. Be sufficiently careful for water quality control and water treatment at the installation of the circulation water system.

- Removal of impurities inside piping
Be careful not to allow impurities such as welding fragment, remaining sealing material and rust from mixing into the piping during installation work.
- Water treatment

The water quality standards have been established by the industry (Japan Refrigeration, Air Conditioning Industry Association, in case of Japan) for water treatment to be applied.

Items	Lower mid-range temperature water system		Tendency	
	Recirculating water [20<T<60°C] [68<T<140°F]	Make-up water	Corrosive	Scale-forming
pH (25°C[77°F])	7.0 ~ 8.0	7.0 ~ 8.0	○	○
Electric conductivity (mS/m) (25°C[77°F]) (μS/cm) (25°C[77°F])	30 or less [300 or less]	30 or less [300 or less]	○	○
Chloride ion (mg Cl / l)	50 or less	50 or less	○	
Sulfate ion (mg SO ₄ ²⁻ / l)	50 or less	50 or less	○	
Acid consumption (pH4.8) (mg CaCO ₃ / l)	50 or less	50 or less		○
Total hardness (mg CaCO ₃ / l)	70 or less	70 or less		○
Calcium hardness (mg CaCO ₃ / l)	50 or less	50 or less		○
Ionic silica (mg SiO ₂ / l)	30 or less	30 or less		○
Iron (mg Fe / l)	1.0 or less	0.3 or less	○	○
Copper (mg Cu / l)	1.0 or less	0.1 or less	○	
Sulfide ion (mg S ²⁻ / l)	not to be detected	not to be detected	○	
Ammonium ion (mg NH ₄ ⁺ / l)	0.3 or less	0.1 or less	○	
Residual chlorine (mg Cl / l)	0.25 or less	0.3 or less	○	
Free carbon dioxide (mg CO ₂ / l)	0.4 or less	4.0 or less	○	
Ryzner stability index	-	-	○	○

Reference : Guideline of Water Quality for Refrigeration and Air Conditioning Equipment. (JRA GL02E-1994)

2) Thermal insulation work

Thermal insulation or anti sweating work is not required for the piping inside buildings in the case of the CITY MULTI WY system if the operating temperature range of circulation water stays within the temperature near the normal (summer :30°C [86°F], winter : 20°C [68°F]).

In case of the conditions below, however, thermal insulation is required.

- Use of well water for heat source water
- Outdoor piping portions
- Indoor piping portions where freezing may be caused in winter

In order to keep the water quality within such standards, you are kindly requested to conduct bleeding-off by overflow and periodical water quality tests, and use inhibitors to suppress condensation or corrosion. Since piping may be corroded by some kinds of inhibitor, consult an appropriate water treatment expert for proper water treatment.

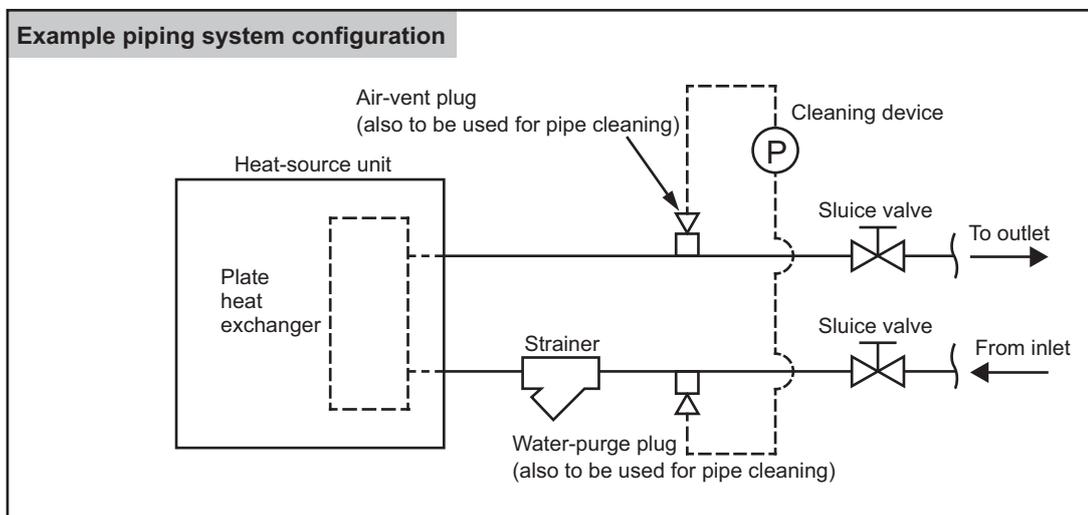
4) Pump interlock

Operating the heat source unit without circulation water inside the water piping can cause a trouble. Be sure to provide interlocking for the unit operation and water circuit. Since the terminal block is being provided inside the unit, use it as required.

5) Handling plate heat exchangers for heat-source units

<Designing the piping system>

- Install a strainer (50 mesh or finer recommended) near the heat-source unit on the inlet side of the hot/cold water pipe and cooling-water pipe (hereafter referred to as water pipes) to prevent an infiltration of foreign materials of solid nature, such as dirt and sand, into the plate heat exchanger.
- Depending on the water quality, scale may form inside plate heat exchangers. Plate heat exchangers must be chemically cleaned regularly to remove scale formation. Install sluice valves on the water pipes, and provide ports for connecting a pipe between the sluice valves and the heat-source unit for chemical cleaning.
- On both the inlet and outlet sides of water pipes, provide a plug to remove trapped air and water (also to be used for cleaning heat-source units and for purging water before a period of nonuse in winter or at the end of an air conditioning season). Also, provide automatic air-vent valves where air is likely to be trapped (such as a pipe that runs vertically).
- In addition to installing the above-mentioned strainers, install a cleanable strainer near the pump pipe inlet.
- Keep the pipes properly insulated and take an appropriate measure against humidity to minimize heat loss and prevent freeze damage in severe cold climate.
- If the system is stopped during winter or at night in subfreezing temperatures, take appropriate measures to protect pipes from freezing (i.e., pipe purging and use of water-circulation pump or heater) and prevent resultant damage to the plate heat exchanger.



<Test run>

- Before performing a test run, check that the piping system is properly installed, especially the strainers, air-vents, automatic water-supply valves, expansion tanks, and systems.
- After the pipe system is filled with water, first, operate the pump alone to check the system for trapped air and adjust the water flow rate to prevent the plate heat exchanger from freezing. Take into consideration the water pressure loss before and after each heat-source unit, and make sure the water flow rate falls within the design water flow rate range. Stop the test run and correct any problems found, if any.
- At the completion of a test run, check the strainer at the inlet pipe of the heat-source unit and clean it as necessary.

<Daily maintenance>

- Controlling the water quality
Plate heat exchangers cannot be disassembled for cleaning and have no replaceable parts. Watch the water quality to prevent corrosion and scale formation. The quality of the water to be used for plate heat exchangers must meet the water quality guidelines JRA GL-02-1994 specified by Japan Refrigeration and Air conditioning Industry Association (JRAIA). (Refer to 3) Water treatment and water quality control.)
- Controlling the circulation water flow rate
Insufficient water rate will cause freeze damage to plate heat exchangers. Check for insufficient water flow caused by clogged strainer, trapped air in the system, or malfunction of the circulation water pump. Flow rate can also be checked by measuring the temperature or pressure difference between the inlet and outlet of plate heat exchangers. If the temperature or pressure difference goes outside of the specified range, stop the operation, remove the cause of the problem, and resume operation.
- What to do when the freeze protection trips
If the freeze protection trips during operation, be sure to remove its cause before resuming operation. Tripped freeze protection indicates that the system is partially frozen, and resuming operation without removing the cause of the problem will result in freeze damage to plate heat exchangers and/or pipes as well as resultant refrigerant leaks and infiltration of water into the refrigerant circuit.

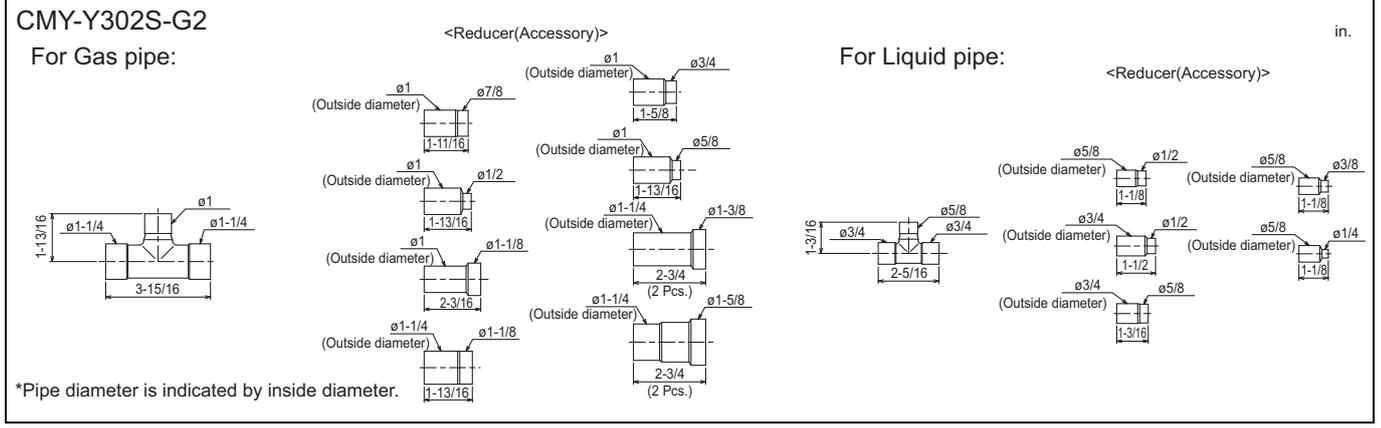
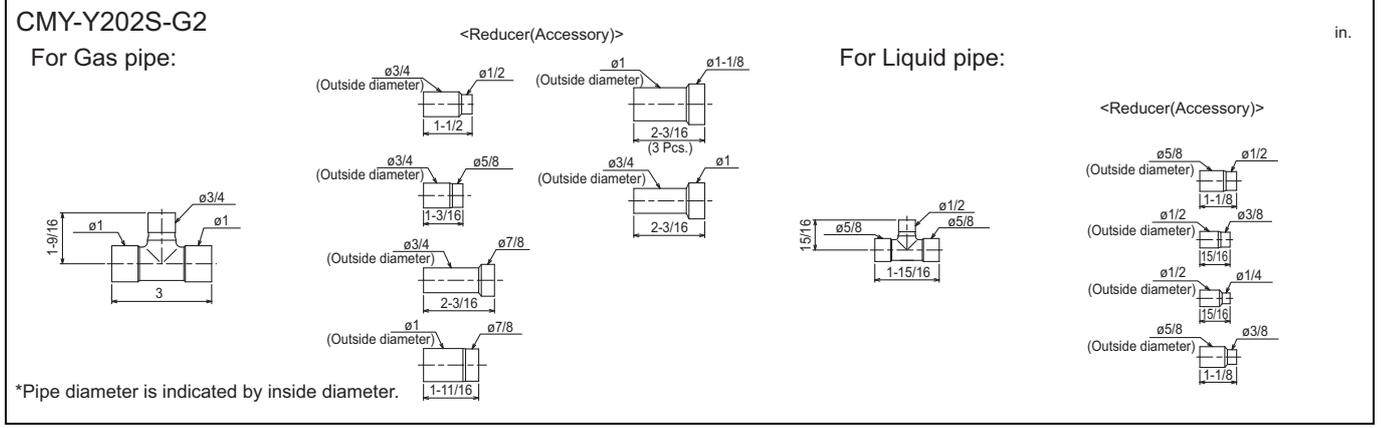
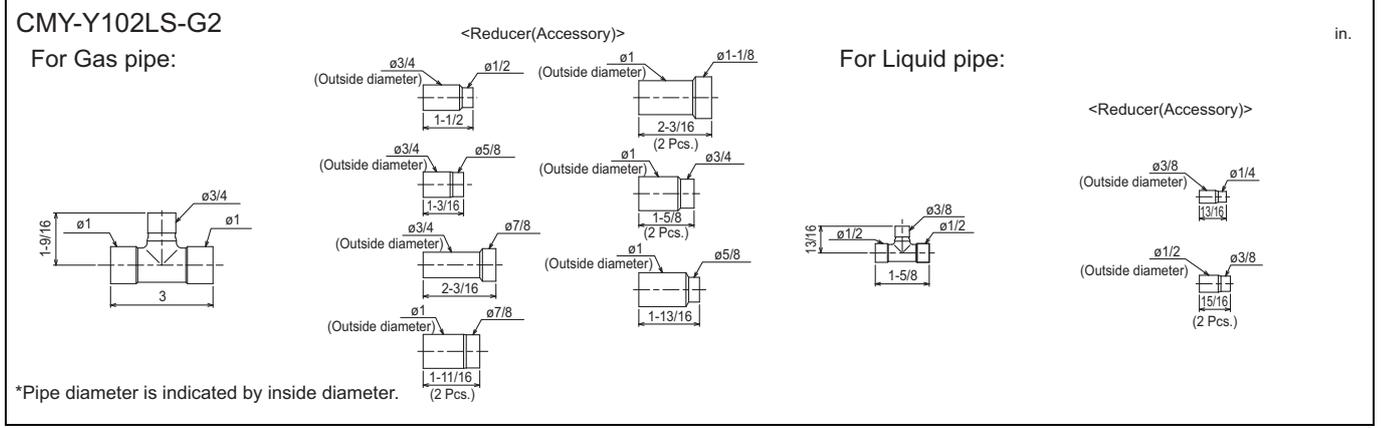
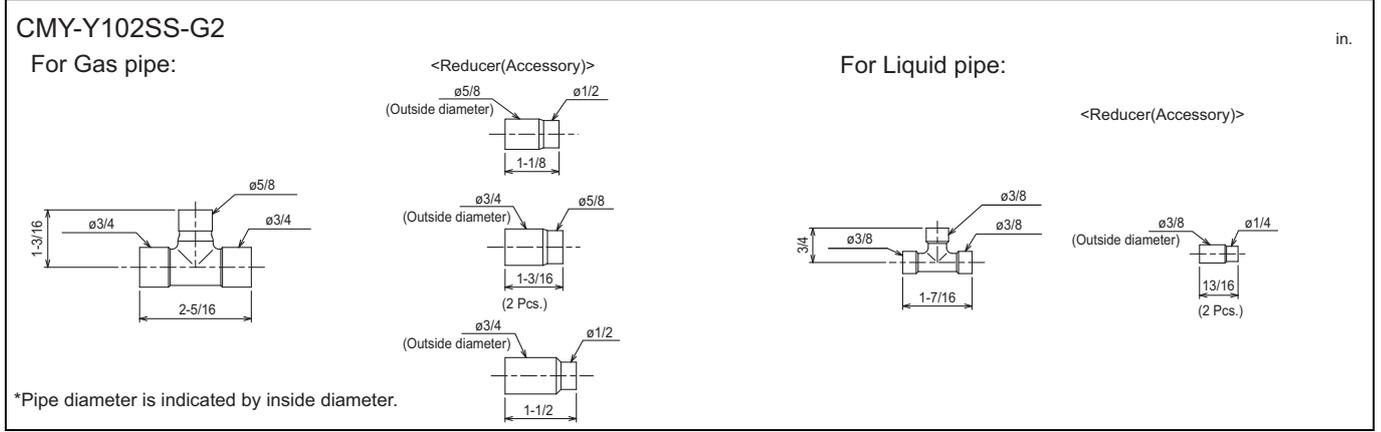
<Maintaining plate heat exchangers>

Plate heat exchangers must be maintained in a planned and periodical manner to prevent scale formation, which may cause performance loss or decrease water flow rate that result in freeze damage to the plate heat exchanger.

- ♦ Check the following items before the operating season.
 1. Check that the water quality meets the specified water quality.
 2. Clean the strainers.
 3. Check that the water flow rate is adequate.
 4. Check for proper operation (e.g., pressure, flow rate, inlet/outlet temperatures).
- ♦ Plate heat exchangers cannot be disassembled for cleaning. Clean them in the following way.
 1. Make sure that there is a pipe connection port on the water inlet pipe.
Use formic acid, citric acid, oxalic acid, acetic acid, or phosphoric acid diluted to 5% to clean plate heat exchangers.
Do not use highly corrosive acids, such as hydrochloric acid, sulfuric acid, or nitric acid.
 2. Make sure that valves are installed before the inlet connection port and after the outlet connection port.
 3. Connect a pipe for circulating cleaning solution to the inlet/outlet pipes of the plate heat exchanger, fill the plate heat exchanger with cleaning solution at a temperature between 50 and 60°C, and circulate the cleaning solution with a pump for 2 to 5 hours. The cleaning time will depend on the temperature of the cleaning solution and the degree of scale formation. Use the color of the cleaning solution as a guide to determine how long the system needs to be cleaned.
 4. When done, discharge the cleaning solution out of the plate heat exchanger, fill it with sodium hydrate (NaOH) or sodium bicarbonate (NaHCO₃) diluted with water to 1 to 2%, and let the solution be circulated for 15 to 20 minutes until the cleaning solution is neutralized.
 5. After neutralizing the cleaning solution, thoroughly rinse the plate heat exchanger with clean water.
 6. When using a commercially available cleaning solution, make sure to use a solution not corrosive to stainless steel or copper.
 7. Consult the cleaning solution manufacture for details.
- ♦ At the completion of cleaning, check the system for proper operation.

9-1. JOINT

CITY MULTI units can be easily connected by using Joint sets and Header sets provided by Mitsubishi Electric. Four kinds of Joint sets are available for use. Refer to section 3 in "System Design" or the Installation Manual that comes with the Joint set for how to install the Joint set.



9-2. HEADER

CITY MULTI units can be easily connected by using Joint sets and Header sets provided by Mitsubishi Electric. Three kinds of Header sets are available for use. Refer to section 3 in "System Design" or the Installation Manual that comes with the Header set for how to install the Header set.

CMY-Y104C-G in.

For gas pipe:

For liquid pipe:

Accessories for gas pipe:
 <Reducer(Accessory)>
 IDø5/8" / IDø1/2" (3 Pcs.)

Accessories for liquid pipe:
 <Reducer(Accessory)>
 ODø3/8" / IDø1/4" (3 Pcs.)

ID: Inner Diameter OD: Outer Diameter
 NOTE: Besides above mentioned accessories, caps for ø1/4", ø3/8", ø1/2", ø5/8" pipes (each diameter 1 piece) are included in the Header set.

CMY-Y108C-G in.

For gas pipe:

For liquid pipe:

Accessories for gas pipe:
 <Reducer(Accessory)>
 IDø1/2" / ODø3/4" / IDø5/8" / IDø7/8" / IDø3/4" / IDø5/8" (5 Pcs.)

Accessories for liquid pipe:
 <Reducer(Accessory)>
 IDø1/4" / ODø3/8" (6 Pcs.)

ID: Inner Diameter OD: Outer Diameter
 NOTE: Besides above mentioned accessories, caps for ø1/4", ø3/8", ø1/2", ø5/8" pipes (each diameter 2 pieces) and 1 cap for ø3/4" pipe are included in the Header set.

CMY-Y1010C-G in.

For gas pipe:

For liquid pipe:

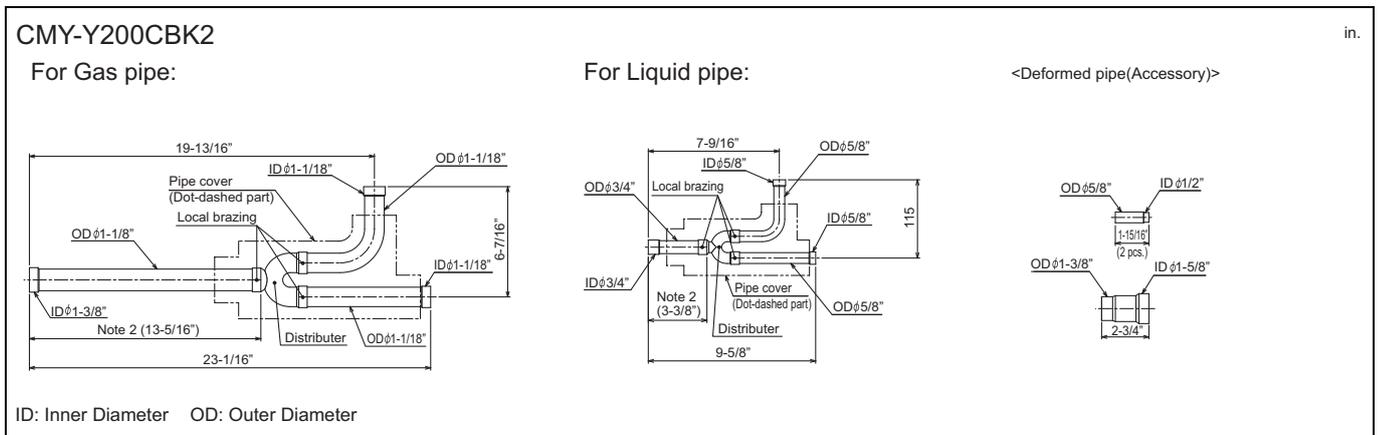
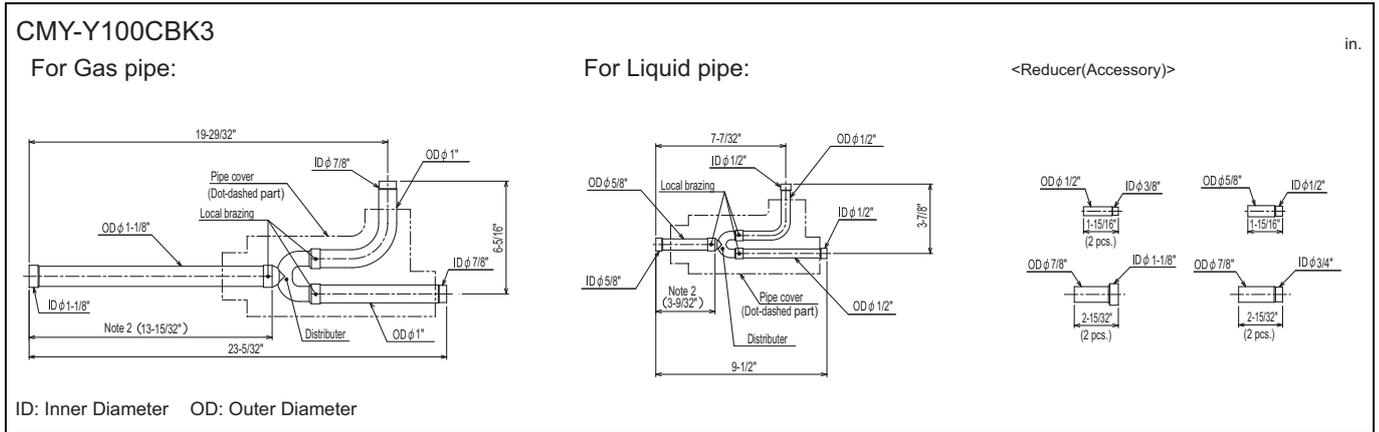
Accessories for gas pipe:
 <Reducer(Accessory)>
 IDø1/2" / ODø3/4" / IDø5/8" / IDø1/2" / IDø3/4" / IDø5/8" / IDø7/8" (5 Pcs.)

Accessories for liquid pipe:
 <Reducer(Accessory)>
 IDø1/4" / ODø3/8" / IDø3/8" / IDø1/4" (5 Pcs.)

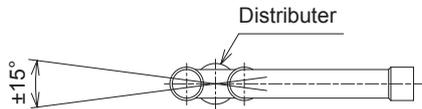
ID: Inner Diameter OD: Outer Diameter
 NOTE: Besides above mentioned accessories, caps for ø1/4", ø3/8", ø1/2", ø5/8" pipes (each diameter 2 pieces) and 1 cap for ø3/4" pipe are included in the Header set.

9-3. OUTDOOR TWINNING KIT

The following optional Outdoor Twinning Kit is needed to use to combine multiple refrigerant pipes. Refer to the chapter entitled System Design Section for the details of selecting a proper twinning kit.



Note 1. Reference the attitude angle of the branch pipe below the fig.



The angle of the branch pipe for high pressure is within $\pm 15^\circ$ against the horizontal plane.

2. Use the attached pipe to braise the port-opening of the distributor.
3. Pipe diameter is indicated by inside diameter.
4. Only use the Twinning pipe by Mitsubishi (optional parts) .

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1. Cooling [Ceiling concealed (Slim type)]

Z(S)LMU

CT

1-1. Cooling capacity with PQHY-P72-360, PQRV-P72-336Z(S)LMU

PEFY-P-NMSU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.5	1.6	1.5	1.7	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8	1.5
08 (2.3)	2.0	1.9	2.1	1.9	2.2	1.9	2.3	1.9	2.3	1.9	2.3	1.9	2.3	1.9
12 (3.5)	3.1	2.5	3.2	2.5	3.3	2.5	3.5	2.5	3.5	2.4	3.5	2.5	3.5	2.5
15 (4.4)	3.9	3.0	4.0	3.0	4.2	3.0	4.4	3.0	4.4	2.9	4.4	2.9	4.4	2.9
18 (5.3)	4.7	3.7	4.8	3.7	5.0	3.8	5.3	3.8	5.3	3.6	5.3	3.7	5.3	3.6
24 (7.0)	6.2	4.9	6.4	4.8	6.7	5.0	7.0	4.9	7.0	4.8	7.0	4.8	7.0	4.8

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMSU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
06 (6,000)	5,300	5,000	5,500	5,000	5,700	5,100	6,000	5,100	6,000	5,000	6,000	5,100	6,000	5,100
08 (8,000)	7,100	6,500	7,300	6,400	7,600	6,600	8,000	6,600	8,000	6,400	8,000	6,500	8,000	6,600
12 (12,000)	10,600	8,500	10,900	8,500	11,400	8,700	11,900	8,700	11,900	8,400	11,900	8,400	11,900	8,400
15 (15,000)	13,300	10,200	13,700	10,200	14,300	10,400	14,900	10,300	14,900	10,000	14,900	10,000	14,900	9,900
18 (18,000)	15,900	12,600	16,400	12,600	17,100	12,800	17,900	12,800	17,900	12,400	17,900	12,400	17,900	12,400
24 (24,000)	21,200	16,700	21,900	16,600	22,900	17,000	23,900	16,900	23,900	16,300	23,900	16,400	23,900	16,300

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

2. Cooling [Ceiling concealed (High static pressure type)]

Z(S)LMU

CT

2-1. Cooling capacity with PQHY-P72-360, PQRV-P72-336Z(S)LMU

PEFY-P-NMHU-E2

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
15 (4.4)	3.9	3.1	4.0	3.1	4.2	3.2	4.4	3.2	4.4	3.0	4.4	3.1	4.4	3.1
18 (5.3)	4.7	3.5	4.8	3.5	5.0	3.6	5.3	3.6	5.3	3.4	5.3	3.4	5.3	3.4
24 (7.0)	6.2	4.8	6.4	4.8	6.7	4.9	7.0	4.8	7.0	4.7	7.0	4.7	7.0	4.7
27 (7.9)	7.0	5.4	7.2	5.3	7.5	5.4	7.9	5.4	7.9	5.2	7.9	5.2	7.9	5.2
30 (8.8)	7.8	6.0	8.0	6.0	8.4	6.1	8.7	6.1	8.7	5.9	8.7	5.9	8.7	5.9
36 (10.6)	9.4	8.1	9.7	8.0	10.1	8.2	10.5	8.2	10.5	7.9	10.5	8.0	10.5	8.1
48 (14.1)	12.5	9.5	12.8	9.5	13.4	9.7	14.0	9.6	14.0	9.3	14.0	9.3	14.0	9.2
54 (15.8)	14.0	10.8	14.4	10.7	15.0	10.9	15.7	10.9	15.7	10.5	15.7	10.5	15.7	10.5

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMHU-E2

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
15 (15,000)	13,300	10,600	13,700	10,500	14,300	10,800	14,900	10,700	14,900	10,400	14,900	10,500	14,900	10,400
18 (18,000)	15,900	12,000	16,400	12,000	17,100	12,200	17,900	12,100	17,900	11,700	17,900	11,700	17,900	11,600
24 (24,000)	21,200	16,400	21,900	16,300	22,900	16,700	23,900	16,600	23,900	16,000	23,900	16,100	23,900	16,000
27 (27,000)	23,900	18,300	24,600	18,200	25,700	18,600	26,800	18,500	26,800	17,800	26,800	17,900	26,800	17,800
30 (30,000)	26,500	20,600	27,300	20,400	28,600	20,900	29,800	20,800	29,800	20,100	29,800	20,100	29,800	20,000
36 (36,000)	31,800	27,400	32,800	27,200	34,300	28,000	35,800	27,900	35,800	27,000	35,800	27,400	35,800	27,500
48 (48,000)	42,400	32,500	43,700	32,300	45,700	32,900	47,700	32,800	47,700	31,600	47,700	31,700	47,700	31,500
54 (54,000)	47,700	36,800	49,200	36,500	51,400	37,300	53,700	37,100	53,700	35,800	53,700	35,900	53,700	35,700

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMHSU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
72 (21.1)	18.6	16.4	19.2	16.3	20.1	16.8	21.0	16.7	21.0	16.2	21.0	16.4	21.0	16.5
96 (28.1)	24.8	20.7	25.6	20.5	26.8	21.1	27.9	21.0	27.9	20.3	27.9	20.5	27.9	20.5

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMHSU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
72 (72,000)	63,600	56,000	65,600	55,600	68,600	57,200	71,600	57,000	71,600	55,200	71,600	56,100	71,600	56,400
96 (96,000)	84,800	70,500	87,500	70,100	91,400	71,900	95,400	71,600	95,400	69,300	95,400	70,000	95,400	70,100

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

3. Cooling [Ceiling concealed (Middle static pressure type)]

Z(S)LMU

3-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

CT

PEFY-P-NMAU-E3

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.6	1.6	1.6	1.7	1.7	1.8	1.7	1.8	1.7	1.8	1.7	1.8	1.7
08 (2.3)	2.0	1.8	2.1	1.8	2.2	1.9	2.3	1.9	2.3	1.8	2.3	1.8	2.3	1.9
12 (3.5)	3.1	2.4	3.2	2.4	3.3	2.5	3.5	2.4	3.5	2.4	3.5	2.4	3.5	2.4
15 (4.4)	3.9	3.3	4.0	3.3	4.2	3.4	4.4	3.4	4.4	3.2	4.4	3.3	4.4	3.3
18 (5.3)	4.7	4.0	4.8	4.0	5.0	4.1	5.3	4.1	5.3	3.9	5.3	4.0	5.3	4.0
24 (7.0)	6.2	5.5	6.4	5.5	6.7	5.7	7.0	5.6	7.0	5.5	7.0	5.6	7.0	5.6
27 (7.9)	7.0	5.9	7.2	5.9	7.5	6.0	7.9	6.0	7.9	5.8	7.9	5.9	7.9	5.9
30 (8.8)	7.8	6.3	8.0	6.2	8.4	6.4	8.7	6.3	8.7	6.1	8.7	6.2	8.7	6.2
36 (10.6)	9.4	7.9	9.7	7.9	10.1	8.1	10.5	8.1	10.5	7.8	10.5	7.9	10.5	7.9
48 (14.1)	12.5	10.0	12.8	9.9	13.4	10.1	14.0	10.1	14.0	9.8	14.0	9.8	14.0	9.8
54 (15.8)	14.0	11.1	14.4	11.1	15.0	11.3	15.7	11.3	15.7	10.9	15.7	11.0	15.7	10.9

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PEFY-P-NMAU-E3

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
06 (6,000)	5,300	5,300	5,500	5,500	5,700	5,700	6,000	5,800	6,000	5,600	6,000	5,800	6,000	5,900
08 (8,000)	7,100	6,300	7,300	6,300	7,600	6,500	8,000	6,500	8,000	6,300	8,000	6,400	8,000	6,400
12 (12,000)	10,600	8,300	10,900	8,200	11,400	8,400	11,900	8,400	11,900	8,100	11,900	8,100	11,900	8,100
15 (15,000)	13,300	11,200	13,700	11,200	14,300	11,500	14,900	11,400	14,900	11,100	14,900	11,200	14,900	11,200
18 (18,000)	15,900	13,600	16,400	13,500	17,100	13,800	17,900	13,800	17,900	13,300	17,900	13,500	17,900	13,600
24 (24,000)	21,200	18,900	21,900	18,800	22,900	19,400	23,900	19,300	23,900	18,700	23,900	19,000	23,900	19,100
27 (27,000)	23,900	20,100	24,600	20,000	25,700	20,500	26,800	20,500	26,800	19,800	26,800	20,000	26,800	20,100
30 (30,000)	26,500	21,400	27,300	21,200	28,600	21,800	29,800	21,700	29,800	20,900	29,800	21,100	29,800	21,100
36 (36,000)	31,800	27,000	32,800	26,800	34,300	27,500	35,800	27,400	35,800	26,500	35,800	26,900	35,800	27,000
48 (48,000)	42,400	34,000	43,700	33,800	45,700	34,600	47,700	34,400	47,700	33,200	47,700	33,500	47,700	33,400
54 (54,000)	47,700	38,000	49,200	37,800	51,400	38,700	53,700	38,500	53,700	37,200	53,700	37,400	53,700	37,300

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

4. Cooling [Vertical-concealed]

Z(S)LMU

4-1. Cooling capacity with PQHY-P72-360, PQRV-P72-336Z(S)LMU

PVfy-P-NAMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
12 (3.5)	3.1	2.8	3.2	2.7	3.3	2.8	3.5	2.8	3.5	2.7	3.5	2.8	3.5	2.8
18 (5.3)	4.7	4.0	4.8	4.0	5.0	4.1	5.3	4.0	5.3	3.9	5.3	4.0	5.3	4.0
24 (7.0)	6.2	5.0	6.4	5.0	6.7	5.1	7.0	5.1	7.0	4.9	7.0	4.9	7.0	4.9
30 (8.8)	7.8	6.3	8.0	6.3	8.4	6.5	8.7	6.4	8.7	6.2	8.7	6.3	8.7	6.3
36 (10.6)	9.4	7.6	9.7	7.5	10.1	7.7	10.5	7.7	10.5	7.4	10.5	7.5	10.5	7.5
48 (14.1)	12.5	9.8	12.8	9.8	13.4	10.0	14.0	10.0	14.0	9.6	14.0	9.7	14.0	9.7
54 (15.8)	14.0	10.7	14.4	10.6	15.0	10.9	15.7	10.8	15.7	10.4	15.7	10.5	15.7	10.4

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PVfy-P-NAMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
12 (12,000)	10,600	9,400	10,900	9,400	11,400	9,600	11,900	9,600	11,900	9,300	11,900	9,400	11,900	9,500
18 (18,000)	15,900	13,500	16,400	13,500	17,100	13,800	17,900	13,800	17,900	13,300	17,900	13,500	17,900	13,500
24 (24,000)	21,200	17,100	21,900	17,000	22,900	17,400	23,900	17,300	23,900	16,800	23,900	16,900	23,900	16,900
30 (30,000)	26,500	21,600	27,300	21,500	28,600	22,000	29,800	21,900	29,800	21,200	29,800	21,400	29,800	21,400
36 (36,000)	31,800	25,700	32,800	25,600	34,300	26,200	35,800	26,100	35,800	25,200	35,800	25,400	35,800	25,400
48 (48,000)	42,400	33,600	43,700	33,400	45,700	34,100	47,700	34,000	47,700	32,800	47,700	33,000	47,700	32,900
54 (54,000)	47,700	36,600	49,200	36,400	51,400	37,100	53,700	36,900	53,700	35,700	53,700	35,700	53,700	35,500

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

5. Cooling [Ceiling cassette (1-way flow type)]

Z(S)LMU

5-1. Cooling capacity with PQHY-P72-360, PQRV-P72-336Z(S)LMU

PMFY-P-NBMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.5	1.6	1.5	1.7	1.5	1.8	1.5	1.8	1.5	1.8	1.5	1.8	1.5
08 (2.3)	2.0	1.8	2.1	1.8	2.2	1.8	2.3	1.8	2.3	1.8	2.3	1.8	2.3	1.8
12 (3.5)	3.1	2.3	3.2	2.3	3.3	2.3	3.5	2.3	3.5	2.2	3.5	2.2	3.5	2.2
15 (4.4)	3.9	2.8	4.0	2.8	4.2	2.8	4.4	2.8	4.4	2.7	4.4	2.7	4.4	2.7

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PMFY-P-NBMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
06 (6,000)	5,300	5,000	5,500	5,000	5,700	5,100	6,000	5,100	6,000	5,000	6,000	5,100	6,000	5,100
08 (8,000)	7,100	6,100	7,300	6,100	7,600	6,300	8,000	6,200	8,000	6,000	8,000	6,100	8,000	6,200
12 (12,000)	10,600	7,900	10,900	7,800	11,400	8,000	11,900	7,900	11,900	7,600	11,900	7,600	11,900	7,500
15 (15,000)	13,300	9,600	13,700	9,500	14,300	9,700	14,900	9,600	14,900	9,200	14,900	9,200	14,900	9,100

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

6. Cooling [Ceiling cassette (4-way flow type)]

Z(S)LMU

6-1. Cooling capacity with PQHY-P72-360, PQRV-P72-336Z(S)LMU

PLFY-P-NCMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
08 (2.3)	2.0	1.9	2.1	1.9	2.2	1.9	2.3	1.9	2.3	1.9	2.3	1.9	2.3	1.9
12 (3.5)	3.1	2.5	3.2	2.5	3.3	2.5	3.5	2.5	3.5	2.4	3.5	2.4	3.5	2.4
15 (4.4)	3.9	2.9	4.0	2.9	4.2	2.9	4.4	2.9	4.4	2.8	4.4	2.8	4.4	2.8

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PLFY-P-NCMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
08 (8,000)	7,100	6,500	7,300	6,400	7,600	6,600	8,000	6,600	8,000	6,400	8,000	6,500	8,000	6,600
12 (12,000)	10,600	8,500	10,900	8,400	11,400	8,600	11,900	8,600	11,900	8,300	11,900	8,400	11,900	8,300
15 (15,000)	13,300	9,800	13,700	9,800	14,300	10,000	14,900	9,900	14,900	9,500	14,900	9,500	14,900	9,400

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PLFY-P-NBMU-E2

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
08 (2.3)	2.0	1.9	2.1	1.9	2.2	1.9	2.3	1.9	2.3	1.8	2.3	1.9	2.3	1.9
12 (3.5)	3.1	2.8	3.2	2.8	3.3	2.9	3.5	2.9	3.5	2.8	3.5	2.8	3.5	2.8
15 (4.4)	3.9	3.4	4.0	3.4	4.2	3.5	4.4	3.5	4.4	3.4	4.4	3.5	4.4	3.5
18 (5.3)	4.7	4.0	4.8	3.9	5.0	4.0	5.3	4.0	5.3	3.9	5.3	3.9	5.3	3.9
24 (7.0)	6.2	5.0	6.4	4.9	6.7	5.0	7.0	5.0	7.0	4.9	7.0	4.9	7.0	4.9
30 (8.8)	7.8	6.2	8.0	6.1	8.4	6.3	8.7	6.2	8.7	6.0	8.7	6.1	8.7	6.0
36 (10.6)	9.4	7.3	9.7	7.3	10.1	7.4	10.5	7.4	10.5	7.1	10.5	7.2	10.5	7.1

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PLFY-P-NBMU-E2

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
08 (8,000)	7,100	6,400	7,300	6,400	7,600	6,600	8,000	6,600	8,000	6,400	8,000	6,500	8,000	6,500
12 (12,000)	10,600	9,600	10,900	9,500	11,400	9,800	11,900	9,800	11,900	9,500	11,900	9,700	11,900	9,700
15 (15,000)	13,300	11,700	13,700	11,700	14,300	12,000	14,900	12,000	14,900	11,600	14,900	11,800	14,900	11,900
18 (18,000)	15,900	13,500	16,400	13,400	17,100	13,700	17,900	13,700	17,900	13,200	17,900	13,400	17,900	13,400
24 (24,000)	21,200	17,000	21,900	16,900	22,900	17,300	23,900	17,200	23,900	16,600	23,900	16,700	23,900	16,700
30 (30,000)	26,500	21,000	27,300	20,900	28,600	21,300	29,800	21,200	29,800	20,500	29,800	20,600	29,800	20,600
36 (36,000)	31,800	24,900	32,800	24,700	34,300	25,300	35,800	25,100	35,800	24,300	35,800	24,400	35,800	24,300

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

7. Cooling [Ceiling suspended]

Z(S)LMU

CT

7-1. Cooling capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

PCFY-P-NKMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
15 (4.4)	3.9	2.9	4.0	2.9	4.2	3.0	4.4	2.9	4.4	2.8	4.4	2.8	4.4	2.8
24 (7.0)	6.2	4.6	6.4	4.5	6.7	4.6	7.0	4.6	7.0	4.4	7.0	4.4	7.0	4.4
30 (8.8)	7.8	6.1	8.0	6.0	8.4	6.1	8.7	6.1	8.7	5.9	8.7	5.9	8.7	5.9
36 (10.6)	9.4	7.3	9.7	7.3	10.1	7.5	10.5	7.4	10.5	7.2	10.5	7.2	10.5	7.2

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PCFY-P-NKMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
15 (15,000)	13,300	9,900	13,700	9,900	14,300	10,100	14,900	10,000	14,900	9,700	14,900	9,700	14,900	9,600
24 (24,000)	21,200	15,600	21,900	15,500	22,900	15,800	23,900	15,700	23,900	15,100	23,900	15,100	23,900	14,900
30 (30,000)	26,500	20,600	27,300	20,500	28,600	21,000	29,800	20,900	29,800	20,100	29,800	20,200	29,800	20,100
36 (36,000)	31,800	25,000	32,800	24,800	34,300	25,400	35,800	25,200	35,800	24,400	35,800	24,500	35,800	24,400

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

8-1. Cooling capacity with PQHY-P72-360, PQRV-P72-336Z(S)LMU

PKFY-P-NBMU,NHMU,NKMU-E2

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.3	1.6	1.2	1.7	1.3	1.8	1.3	1.8	1.2	1.8	1.2	1.8	1.2
08 (2.3)	2.0	1.9	2.1	1.9	2.2	2.0	2.3	2.0	2.3	1.9	2.3	2.0	2.3	2.0
12 (3.5)	3.1	2.5	3.2	2.5	3.3	2.6	3.5	2.6	3.5	2.5	3.5	2.5	3.5	2.5
15 (4.4)	3.9	3.0	4.0	3.0	4.2	3.1	4.4	3.1	4.4	3.0	4.4	3.0	4.4	3.0
18 (5.3)	4.7	3.5	4.8	3.5	5.0	3.5	5.3	3.5	5.3	3.4	5.3	3.4	5.3	3.4
24 (7.0)	6.2	5.6	6.4	5.6	6.7	5.8	7.0	5.8	7.0	5.6	7.0	5.7	7.0	5.7
30 (8.8)	7.8	6.4	8.0	6.4	8.4	6.5	8.7	6.5	8.7	6.3	8.7	6.3	8.7	6.4

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PKFY-P-NBMU,NHMU,NKMU-E2

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
06 (6,000)	5,300	4,200	5,500	4,200	5,700	4,300	6,000	4,300	6,000	4,100	6,000	4,200	6,000	4,100
08 (8,000)	7,100	6,600	7,300	6,600	7,600	6,800	8,000	6,800	8,000	6,600	8,000	6,700	8,000	6,800
12 (12,000)	10,600	8,700	10,900	8,600	11,400	8,800	11,900	8,800	11,900	8,500	11,900	8,600	11,900	8,600
15 (15,000)	13,300	10,400	13,700	10,300	14,300	10,600	14,900	10,500	14,900	10,100	14,900	10,200	14,900	10,200
18 (18,000)	15,900	11,900	16,400	11,800	17,100	12,100	17,900	12,000	17,900	11,600	17,900	11,600	17,900	11,500
24 (24,000)	21,200	19,300	21,900	19,200	22,900	19,800	23,900	19,700	23,900	19,100	23,900	19,400	23,900	19,600
30 (30,000)	26,500	21,800	27,300	21,700	28,600	22,300	29,800	22,200	29,800	21,400	29,800	21,600	29,800	21,700

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

9. Cooling [Floor standing (Exposed type/Concealed type)]

Z(S)LMU

CT

9-1. Cooling capacity with PQHY-P72-360, PQRV-P72-336Z(S)LMU

PFFY-P-NEMU/NRMU-E

CA: Capacity (kW), SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.													
	21.7°C D.B. 15°C W.B.		22.8°C D.B. 16.1°C W.B.		25°C D.B. 17.8°C W.B.		26.7°C D.B. 19.4°C W.B.		27.8°C D.B. 20.6°C W.B.		30°C D.B. 22.2°C W.B.		32.2°C D.B. 23.9°C W.B.	
	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC	CA	SHC
06 (1.8)	1.6	1.5	1.6	1.4	1.7	1.5	1.8	1.5	1.8	1.4	1.8	1.5	1.8	1.5
08 (2.3)	2.0	1.7	2.1	1.6	2.2	1.7	2.3	1.7	2.3	1.6	2.3	1.6	2.3	1.6
12 (3.5)	3.1	2.3	3.2	2.3	3.3	2.4	3.5	2.4	3.5	2.3	3.5	2.3	3.5	2.3
15 (4.4)	3.9	3.0	4.0	2.9	4.2	3.0	4.4	3.0	4.4	2.9	4.4	2.9	4.4	2.9
18 (5.3)	4.7	3.6	4.8	3.6	5.0	3.7	5.3	3.6	5.3	3.5	5.3	3.5	5.3	3.5
24 (7.0)	6.2	4.5	6.4	4.5	6.7	4.6	7.0	4.6	7.0	4.4	7.0	4.4	7.0	4.3

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

PFFY-P-NEMU/NRMU-E

CA: Capacity (BTU/h), SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.													
	71°F D.B. 59°F W.B.		73°F D.B. 61°F W.B.		77°F D.B. 64°F W.B.		80°F D.B. 67°F W.B.		82°F D.B. 69°F W.B.		86°F D.B. 72°F W.B.		90°F D.B. 75°F W.B.	
	CA	SHC												
06 (6,000)	5,300	4,900	5,500	4,900	5,700	5,000	6,000	5,000	6,000	4,900	6,000	5,000	6,000	5,000
08 (8,000)	7,100	5,700	7,300	5,700	7,600	5,800	8,000	5,800	8,000	5,600	8,000	5,700	8,000	5,600
12 (12,000)	10,600	8,000	10,900	8,000	11,400	8,100	11,900	8,100	11,900	7,800	11,900	7,800	11,900	7,800
15 (15,000)	13,300	10,100	13,700	10,000	14,300	10,200	14,900	10,200	14,900	9,800	14,900	9,800	14,900	9,800
18 (18,000)	15,900	12,200	16,400	12,200	17,100	12,400	17,900	12,400	17,900	11,900	17,900	12,000	17,900	11,900
24 (24,000)	21,200	15,500	21,900	15,400	22,900	15,700	23,900	15,600	23,900	15,000	23,900	14,900	23,900	14,800

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

10-1. Heating capacity with PQHY-P72-360, PQRY-P72-336Z(S)LMU

All indoor units

SHC: Sensible Heat Capacity (kW)

Model size (Rated kW)	Indoor air temp.			
	15°C D.B.	21.1°C D.B.	25°C D.B.	27.2°C D.B.
	SHC	SHC	SHC	SHC
06 (2.0)	2.0	2.0	2.0	1.7
08 (2.6)	2.6	2.6	2.6	2.2
12 (4.0)	4.0	4.0	4.0	3.4
15 (5.0)	5.0	5.0	5.0	4.3
18 (5.9)	5.9	5.9	5.9	5.1
24 (7.9)	7.9	7.9	7.9	6.8
27 (8.8)	8.8	8.8	8.8	7.6
30 (10.0)	10.0	10.0	10.0	8.6
36 (11.7)	11.7	11.7	11.7	10.1
48 (15.8)	15.8	15.8	15.8	13.6
54 (17.6)	17.6	17.6	17.6	15.2
72 (23.4)	23.4	23.4	23.4	20.2
96 (31.7)	31.7	31.7	31.7	27.3

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

All indoor units

SHC: Sensible Heat Capacity (BTU/h)

Model size (Rated BTU)	Indoor air temp.			
	59°F D.B.	70°F D.B.	77°F D.B.	81°F D.B.
	SHC	SHC	SHC	SHC
06 (6,700)	6,700	6,700	6,700	5,800
08 (9,000)	9,000	9,000	9,000	7,800
12 (13,500)	13,500	13,500	13,500	11,600
15 (17,000)	17,000	17,000	17,000	14,700
18 (20,000)	20,000	20,000	20,000	17,200
24 (27,000)	27,000	27,000	27,000	23,300
27 (30,000)	30,000	30,000	30,000	25,900
30 (34,000)	34,000	34,000	34,000	29,300
36 (40,000)	40,000	40,000	40,000	34,500
48 (54,000)	54,000	54,000	54,000	46,500
54 (60,000)	60,000	60,000	60,000	51,700
72 (80,000)	80,000	80,000	80,000	69,000
96 (108,000)	108,000	108,000	108,000	93,100

* The capacity does not depend on the inlet-water temperature.

kcal/h = kW x 860, BTU/h = kW x 3,412

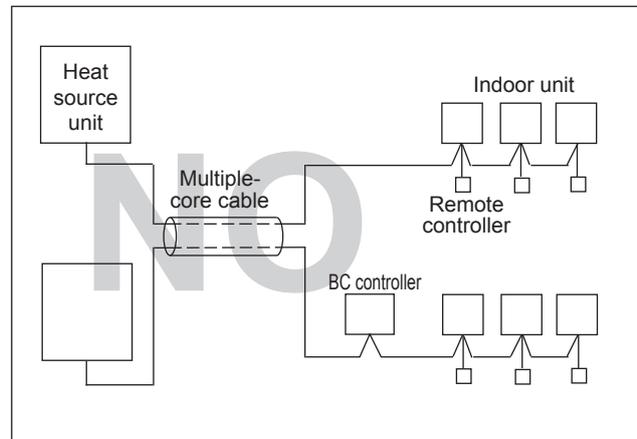
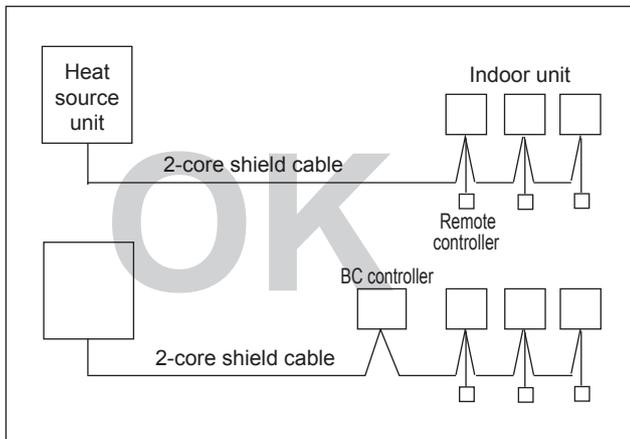
CITY MULTI

SYSTEM DESIGN WY SERIES - 575V

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1-1. General cautions

- ① Follow ordinance of your governmental organization for technical standard related to electrical equipment, wiring regulations, and guidance of each electric power company.
- ② Wiring for control (hereinafter referred to as transmission cable) shall be (50mm[1-5/8in] or more) apart from power source wiring so that it is not influenced by electric noise from power source wiring. (Do not insert transmission cable and power source wire in the same conduit.)
- ③ Be sure to provide designated grounding work to heat source unit.
- ④ Give some allowance to wiring for electrical part box of indoor and heat source unit, because the box is sometimes removed at the time of service work.
- ⑤ Never connect 100V, 208-230V, 575V power source to terminal block of transmission cable. If connected, electrical parts will be damaged.
- ⑥ Use 2-core shield cable for transmission cable. If transmission cables of different systems are wired with the same multicore cable, the resultant poor transmitting and receiving will cause erroneous operations.
- ⑦ When extending the transmission line, make sure to extend the shield cable as well.



1-2. Power supply for Indoor unit and Heat source unit

1-2-1. Electrical characteristics of Indoor unit

Symbols: MCA: Minimum Circuit Ampacity (=1.25xFLA) FLA: Full Load Amps

IFM: Indoor Fan Motor Output: Fan motor rated output

Model	Indoor Unit			IFM			
	Hz	Volts	Voltage range	MCA(A)	Output(kW)	FLA(A)	
PLFY-P08NCMU-E	60Hz	208 / 230V	198 to 253V	0.29 / 0.29	0.015 / 0.015	0.23 / 0.23	
PLFY-P12NCMU-E				0.35 / 0.35	0.020 / 0.020	0.28 / 0.28	
PLFY-P15NCMU-E				0.35 / 0.35	0.020 / 0.020	0.28 / 0.28	
PLFY-P08NBMU-E2				0.39 / 0.39	0.050 / 0.050	0.31 / 0.31	
PLFY-P12NBMU-E2				0.39 / 0.39	0.050 / 0.050	0.31 / 0.31	
PLFY-P15NBMU-E2				0.39 / 0.39	0.050 / 0.050	0.31 / 0.31	
PLFY-P18NBMU-E2				0.42 / 0.42	0.050 / 0.050	0.33 / 0.33	
PLFY-P24NBMU-E2				0.59 / 0.59	0.050 / 0.050	0.47 / 0.47	
PLFY-P30NBMU-E2				0.63 / 0.63	0.050 / 0.050	0.50 / 0.50	
PLFY-P36NBMU-E2				1.09 / 1.09	0.120 / 0.120	0.87 / 0.87	
PMFY-P06NBMU-E	60Hz	208 / 230V	198 to 253V	0.25 / 0.25	0.028 / 0.028	0.20 / 0.20	
PMFY-P08NBMU-E				0.25 / 0.25	0.028 / 0.028	0.20 / 0.20	
PMFY-P12NBMU-E				0.26 / 0.26	0.028 / 0.028	0.21 / 0.21	
PMFY-P15NBMU-E				0.33 / 0.33	0.028 / 0.028	0.26 / 0.26	
PEFY-P06NMAU-E3	60Hz	208 / 230V	188 to 253V	1.05 / 1.05	0.085 / 0.085	0.84 / 0.84	
PEFY-P08NMAU-E3				1.05 / 1.05	0.085 / 0.085	0.84 / 0.84	
PEFY-P12NMAU-E3				1.20 / 1.20	0.085 / 0.085	0.96 / 0.96	
PEFY-P15NMAU-E3				1.45 / 1.45	0.085 / 0.085	1.16 / 1.16	
PEFY-P18NMAU-E3				1.56 / 1.56	0.085 / 0.085	1.25 / 1.25	
PEFY-P24NMAU-E3				2.73 / 2.73	0.121 / 0.121	2.18 / 2.18	
PEFY-P27NMAU-E3				2.73 / 2.73	0.121 / 0.121	2.18 / 2.18	
PEFY-P30NMAU-E3				2.73 / 2.73	0.121 / 0.121	2.18 / 2.18	
PEFY-P36NMAU-E3				3.32 / 3.32	0.244 / 0.244	2.66 / 2.66	
PEFY-P48NMAU-E3				3.41 / 3.41	0.244 / 0.244	2.73 / 2.73	
PEFY-P54NMAU-E3				3.31 / 3.31	0.244 / 0.244	2.65 / 2.65	
PEFY-P06NMSU-E				60Hz	208 / 230V	188 to 253V	0.47 / 0.50
PEFY-P08NMSU-E	0.47 / 0.50	0.023 / 0.023	0.41 / 0.39				
PEFY-P12NMSU-E	0.68 / 0.74	0.032 / 0.032	0.46 / 0.43				
PEFY-P15NMSU-E	1.20 / 1.33	0.130 / 0.130	0.47 / 0.45				
PEFY-P18NMSU-E	1.20 / 1.33	0.130 / 0.130	0.64 / 0.60				
PEFY-P24NMSU-E	1.57 / 1.73	0.180 / 0.180	0.88 / 0.83				
PEFY-P15NMHU-E2	1.63 / 1.50	0.17	1.30 / 1.20				
PEFY-P18NMHU-E2	1.63 / 1.50	0.17	1.30 / 1.20				
PEFY-P24NMHU-E2	2.11 / 1.83	0.25	1.69 / 1.46				
PEFY-P27NMHU-E2	2.35 / 2.13	0.26	1.88 / 1.70				
PEFY-P30NMHU-E2	2.70 / 2.45	0.31	2.16 / 1.96				
PEFY-P36NMHU-E2	4.16 / 3.67	0.49	3.32 / 2.94				
PEFY-P48NMHU-E2	4.16 / 3.67	0.49	3.32 / 2.94				
PEFY-P54NMHU-E2	4.18 / 3.69	0.55	3.34 / 2.95				
PEFY-P72NMHSU-E	187 to 253V	7.7	0.87				6.2
PEFY-P96NMHSU-E		8.2	0.87				6.6

1. Electrical work

Z(S)LMU

S.D. WY 575V

Symbols: MCA: Minimum Circuit Ampacity (=1.25xFLA) FLA: Full Load Amps

IFM: Indoor Fan Motor

Output: Fan motor rated output

Model	Indoor Unit			IFM		
	Hz	Volts	Voltage range	MCA(A)	Output(kW)	FLA(A)
PCFY-P15NKMU-E	60Hz	208 / 230V	198 to 253V	0.44 / 0.44	0.090 / 0.090	0.35 / 0.35
PCFY-P24NKMU-E				0.52 / 0.52	0.095 / 0.095	0.41 / 0.41
PCFY-P30NKMU-E				1.22 / 1.22	0.160 / 0.160	0.97 / 0.97
PCFY-P36NKMU-E				1.22 / 1.22	0.160 / 0.160	0.97 / 0.97
PKFY-P06NBMU-E2	60Hz	208 / 230V	198 to 253V	0.19 / 0.19	0.008 / 0.008	0.15 / 0.15
PKFY-P08NHMU-E2				0.38 / 0.38	0.030 / 0.030	0.30 / 0.30
PKFY-P12NHMU-E2				0.38 / 0.38	0.030 / 0.030	0.30 / 0.30
PKFY-P15NHMU-E2				0.38 / 0.38	0.030 / 0.030	0.30 / 0.30
PKFY-P18NHMU-E2				0.38 / 0.38	0.030 / 0.030	0.30 / 0.30
PKFY-P24NKMU-E2				0.63 / 0.63	0.056 / 0.056	0.50 / 0.50
PKFY-P30NKMU-E2				0.63 / 0.63	0.056 / 0.056	0.50 / 0.50
PFFY-P06NEMU-E	60Hz	208 / 230V	188 to 253V	0.32 / 0.34	0.015 / 0.015	0.25 / 0.27
PFFY-P08NEMU-E				0.32 / 0.34	0.015 / 0.015	0.25 / 0.27
PFFY-P12NEMU-E				0.34 / 0.38	0.018 / 0.018	0.27 / 0.30
PFFY-P15NEMU-E				0.40 / 0.44	0.030 / 0.030	0.32 / 0.35
PFFY-P18NEMU-E				0.48 / 0.53	0.035 / 0.035	0.38 / 0.42
PFFY-P24NEMU-E				0.59 / 0.64	0.063 / 0.063	0.47 / 0.51
PFFY-P06NRMU-E	60Hz	208 / 230V	188 to 253V	0.32 / 0.34	0.015 / 0.015	0.25 / 0.27
PFFY-P08NRMU-E				0.32 / 0.34	0.015 / 0.015	0.25 / 0.27
PFFY-P12NRMU-E				0.34 / 0.38	0.018 / 0.018	0.27 / 0.30
PFFY-P15NRMU-E				0.40 / 0.44	0.030 / 0.030	0.32 / 0.35
PFFY-P18NRMU-E				0.48 / 0.53	0.035 / 0.035	0.38 / 0.42
PFFY-P24NRMU-E				0.59 / 0.64	0.063 / 0.063	0.47 / 0.51
PVFY-P12NAMU-E	60Hz	208 / 230V	188 to 253V	3.00 / 3.00	0.121 / 0.121	2.4 / 2.4
PVFY-P18NAMU-E				3.00 / 3.00	0.121 / 0.121	2.4 / 2.4
PVFY-P24NAMU-E				3.00 / 3.00	0.121 / 0.121	2.4 / 2.4
PVFY-P30NAMU-E				4.13 / 4.13	0.244 / 0.244	3.3 / 3.3
PVFY-P36NAMU-E				4.13 / 4.13	0.244 / 0.244	3.3 / 3.3
PVFY-P48NAMU-E				5.63 / 5.63	0.430 / 0.430	4.5 / 4.5
PVFY-P54NAMU-E				5.63 / 5.63	0.430 / 0.430	4.5 / 4.5

1-2-2. Electrical characteristics of Heat source unit at cooling mode

Symbols: MCA: Minimum Circuit Ampacity
SC: Starting Current, RLA: Rated Load Amps

PQHY-P-Z(S)LMU

Model	Unit Combination	Heat source unit					Compressor	
		Hz	Volts	Voltage range	MCA(A)	MOP(A)	Output (kW)	SC(A)
PQHY-P72ZLMU-A	-	60Hz	575V	518 to 633V	5	15	4.3	7
PQHY-P96ZLMU-A	-				7	15	6.0	7
PQHY-P120ZLMU-A	-				11	15	7.7	7
PQHY-P144ZLMU-A	-				13	20	9.5	7
PQHY-P168ZLMU-A	-				16	25	11.0	7
PQHY-P192ZLMU-A	-				20	30	12.4	7
PQHY-P144ZSLMU-A	PQHY-P72ZLMU-A				5	15	4.3	7
	PQHY-P72ZLMU-A				5	15	4.3	7
PQHY-P168ZSLMU-A	PQHY-P72ZLMU-A				5	15	4.3	7
	PQHY-P96ZLMU-A				7	15	6.0	7
PQHY-P192ZSLMU-A	PQHY-P96ZLMU-A				7	15	6.0	7
	PQHY-P96ZLMU-A				7	15	6.0	7
PQHY-P216ZSLMU-A	PQHY-P96ZLMU-A				7	15	6.0	7
	PQHY-P120ZLMU-A				11	15	7.7	7
PQHY-P240ZSLMU-A	PQHY-P120ZLMU-A				11	15	7.7	7
	PQHY-P120ZLMU-A				11	15	7.7	7
PQHY-P288ZSLMU-A	PQHY-P144ZLMU-A				13	20	9.5	7
	PQHY-P144ZLMU-A				13	20	9.5	7
PQHY-P312ZSLMU-A	PQHY-P144ZLMU-A				13	20	9.5	7
	PQHY-P168ZLMU-A				16	25	11.0	7
PQHY-P336ZSLMU-A	PQHY-P168ZLMU-A				16	25	11.0	7
	PQHY-P168ZLMU-A				16	25	11.0	7
PQHY-P360ZSLMU-A	PQHY-P168ZLMU-A				16	25	11.0	7
	PQHY-P192ZLMU-A				20	30	12.4	7

1-3. Power cable specifications

Thickness of wire for main power supply, capacities of the switch and system impedance

	Model	Minimum wire thickness (mm ² /AWG)		
		Main cable	Branch	Ground
Heat source unit	PQHY-P72ZLMU-A	2.1/14	-	2.1/14
	PQHY-P96ZLMU-A	2.1/14	-	2.1/14
	PQHY-P120ZLMU-A	2.1/14	-	2.1/14
	PQHY-P144ZLMU-A	3.3/12	-	3.3/12
	PQHY-P168ZLMU-A	5.3/10	-	5.3/10
	PQHY-P192ZLMU-A	5.3/10	-	5.3/10
Total operating current of the indoor unit	F0 = 15 or less *1	2.1/14	2.1/14	2.1/14
	F0 = 20 or less *1	3.3/12	3.3/12	3.3/12
	F0 = 30 or less *1	5.3/10	5.3/10	5.3/10

*1 Please take the larger of F1 or F2 as the value for F0.

F1 = Total operating maximum current of the indoor units × 1.2

F2 = {V1 × (Quantity of Type1)/C} + {V1 × (Quantity of Type2)/C} + {V1 × (Quantity of Type3)/C} + {V1 × (Quantity of Others)/C}

Indoor unit		V1	V2
Type1	PLFY-NBMU, PMFY-NBMU, PEFY-NMSU, PCFY-NKMU, PKFY-NHMMU, PKFY-NKMU	18.6	2.4
Type2	PEFY-NMAU	38	1.6
Type3	PEFY-NMHSU	13.8	4.8
Others	Other indoor unit	0	0

C : Multiple of tripping current at tripping time 0.01s

Please pick up "C" from the tripping characteristic of the breaker.

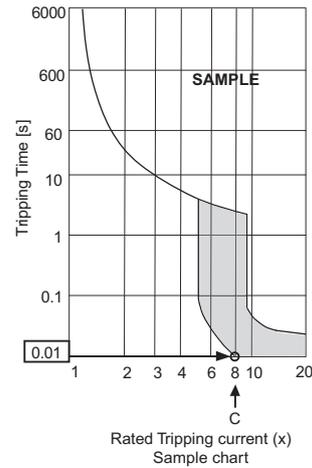
<Example of "F2" calculation>

*Condition PEFY-NMSU × 4 + PEFY-NMAU × 1, C = 8 (refer to right sample chart)

F2 = 18.6 × 4/8 + 38 × 1/8

= 14.05

→16 A breaker (Tripping current = 8 × 16 A at 0.01s)



*2 Current sensitivity is calculated using the following formula.

G1 = (V2 × Quantity of Type1) + (V2 × Quantity of Type2) + (V2 × Quantity of Type3) + (V2 × Quantity of Others) + (V3 × Wire length [km])

G1	Current sensitivity
30 or less	30 mA 0.1sec or less
100 or less	100 mA 0.1sec or less

Wire thickness	V3
1.5 mm ²	48
2.5 mm ²	56
4.0 mm ²	66

- Use dedicated power supplies for the heat source unit and indoor unit. Ensure OC and OS are wired individually.
- Bear in mind ambient conditions (ambient temperature, direct sunlight, rain water, etc.) when proceeding with the wiring and connections.
- The wire size is the minimum value for metal conduit wiring. If the voltage drops, use a wire that is one rank thicker in diameter. Make sure the power-supply voltage does not drop more than 10%. Make sure that the voltage imbalance between the phases is 2% or less.
- Specific wiring requirements should adhere to the wiring regulations of the region.
- Power supply cords of parts of appliances for heat source use shall not be lighter than polychloroprene sheathed flexible cord (design 245 IEC57). For example, use wiring such as YZW.
- A switch with at least 3 mm [1/8 in.] contact separation in each pole shall be provided by the Air Conditioner installer.

⚠ WARNING

- ◆ Be sure to use specified wires for connections and ensure no external force is imparted to terminal connections. If connections are not fixed firmly, heating or fire may result.
- ◆ Be sure to use the appropriate type of overcurrent protection switch. Note that generated overcurrent may include some amount of direct current.

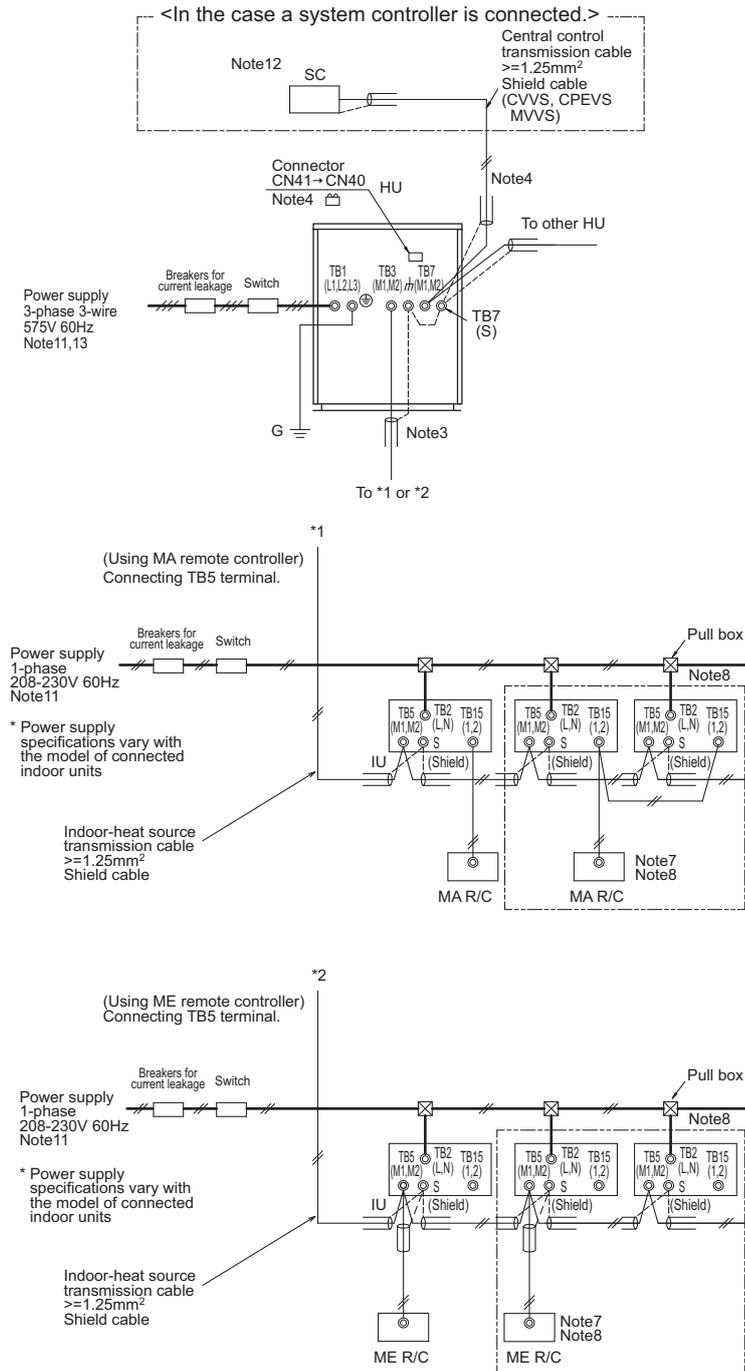
⚠ CAUTION

- ◆ The breakers for current leakage should support Inverter circuit. (e.g. Mitsubishi Electric's NV-C series or equivalent). If no earth leakage breaker is installed, it may cause an electric shock.
- ◆ Breakers for current leakage should combine using of switch.
- ◆ Do not use anything other than a breaker with the correct capacity. Using a breaker of too large capacity may cause malfunction or fire.
- ◆ If a large electric current flows due to malfunction or faulty wiring, earth-leakage breakers on the unit side and on the upstream side of the power supply system may both operate. Depending on the importance of the system, separate the power supply system or take protective coordination of breakers.

1-4. Power supply examples

The local standards and/or regulations is applicable at a higher priority.

1-4-1. PQHY-P72, 96, 120, 144, 168, 192ZLMU

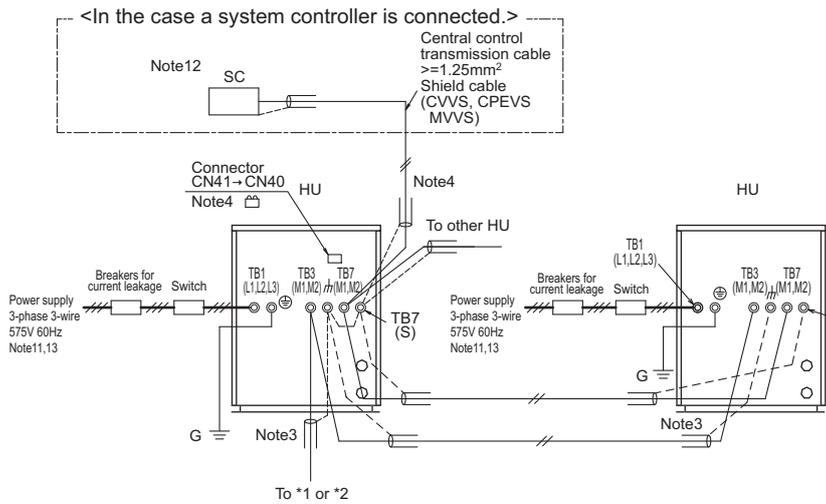


Note:

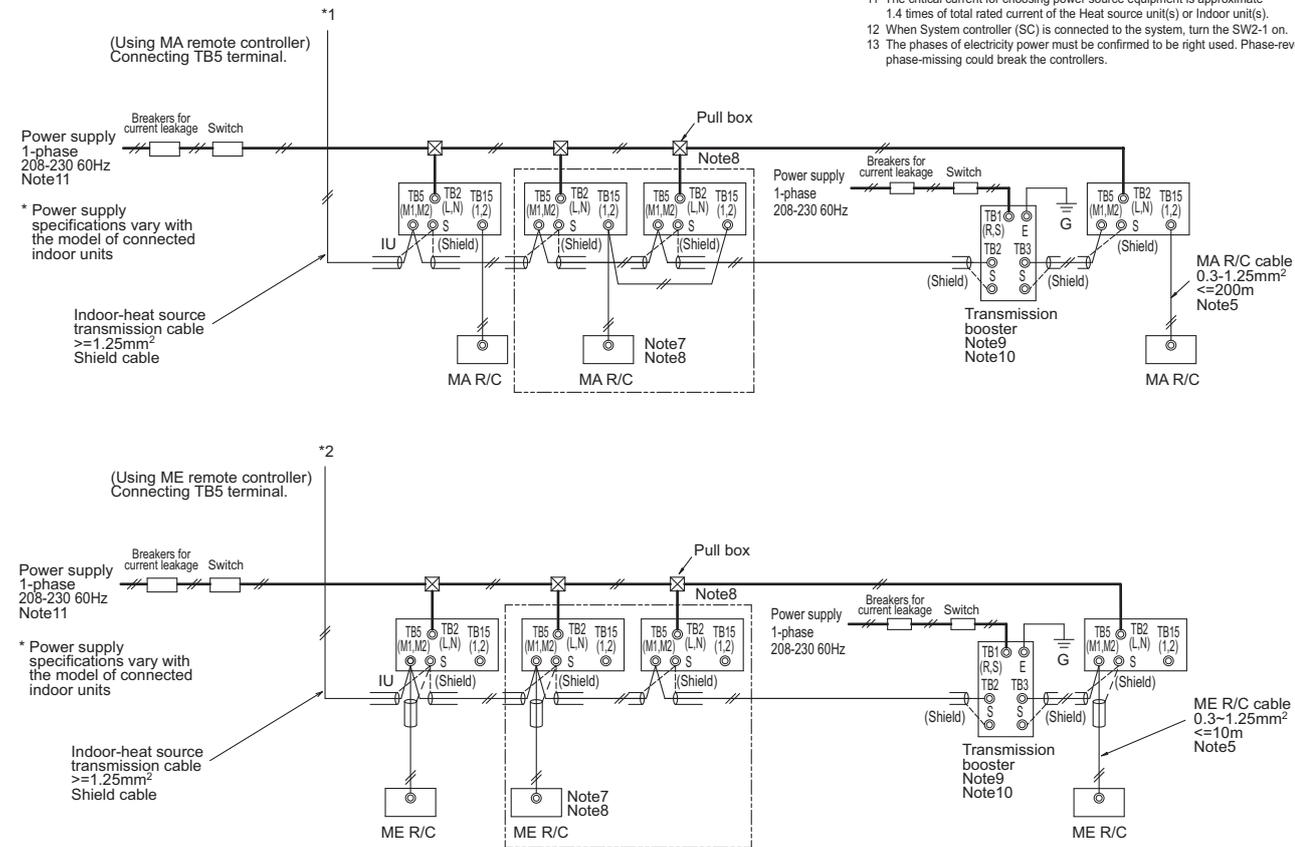
- 1 The transmission cable is not-polarity double-wire.
- 2 Symbol © means a screw terminal for wiring.
- 3 The shield wire of transmission cable should be connected to the grounding terminal at Heat source unit. All shield wire of M-Net transmission cable among Indoor units should be connected to the S terminal at Indoor unit or all shield wire should be connected together.
The broken line at the scheme means shield wire.
- 4 When the Heat source unit connected with system controller, power-supply to TB7 of the heat source unit(s) is needed. The connector change from CN41 to CN40 at one of the heat source units will enable the heat source unit to supply power to TB7, or an extra power supply unit PAC-SC51KUA should be used. The transmission cable (above 1.25mm², shielded, CVVS/CPEVS/MVVS) among Heat source units and system controllers is called central control transmission cable. The shield wire of the central control transmission cable must be grounded at the Heat source unit whose CN41 is changed to CN40. When the power supply unit PAC-SC51KUA is used, connect the shielded cable to the ground terminal on the PAC-SC51KUA.
- 5 MA R/C transmission cable (0.3-1.25mm²) must be less than 200m in length, while ME R/C transmission cable (0.3-1.25mm²) must be less than 10m in length. But transmission cable to the ME R/C can be extended using a M-NET cable (>=1.25mm²) when the length is counted in the M-Net length.
- 6 To wire PAC-YT53CRAU, use a wire with a diameter of 0.3mm² [AWG 22].
- 7 MA remote controller and ME remote controller should not be grouped together.
- 8 If using 1 or 2 (main/sub) MA remote controller to control more than 1 Indoor unit, use MA transmission cable to connect all the TB15 terminals of the Indoor units. It is called "Grouping".
If using 1 or 2 (main/sub) ME remote controller control more than 1 indoor unit, set address to Indoor unit and ME remote controller. For the method, refer to 2-4. "Address setting".
- 9 Indoor board consumes power from TB3. The power balance should be considered according to System Design 2-3 "System configuration restrictions".
- 10 If Transmission booster is needed, be sure to connect the shield wires to the both sides to the booster.
- 11 The critical current for choosing power source equipment is approximate 1.4 times of total rated current of the Heat source unit(s) or Indoor unit(s).
- 12 When System controller (SC) is connected to the system, turn the SW2-1 on.
- 13 The phases of electricity power must be confirmed to be right used. Phase-reverse, or phase-missing could break the controllers.

Symbol	Model	Minimum Wire thickness		
		Power wire <mm ² /AWG>	G wire <mm ² /AWG>	
BKC	Breaker capacity	PQHY-P72ZLMU-A	2.1/14	2.1/14
OCP	Over-current protector	PQHY-P96ZLMU-A	2.1/14	2.1/14
NFB	Non-fuse breaker	PQHY-P120ZLMU-A	2.1/14	2.1/14
HU	Heat source unit	PQHY-P144ZLMU-A	3.3/12	3.3/12
IU	Indoor unit	PQHY-P168ZLMU-A	5.3/10	5.3/10
SC	System controller	PQHY-P192ZLMU-A	5.3/10	5.3/10
MA R/C	MA remote controller			
ME R/C	ME remote controller			

The local standards and/or regulations is applicable at a higher priority.
1-4-2. PQHY-P144, 168, 192, 216, 240, 288, 312, 336, 360ZSLMU



- Note:
- The transmission cable is not-polarity double-wire.
 - Symbol \odot means a screw terminal for wiring.
 - The shield wire of transmission cable should be connected to the grounding terminal at Heat source unit. All shield wire of M-Net transmission cable among Indoor units should be connected to the S terminal at Indoor unit or all shield wire should be connected together. The broken line at the scheme means shield wire.
 - When the Heat source unit connected with system controller, power-supply to TB7 of the heat source unit(s) is needed. The connector change from CN41 to CN40 at one of the heat source units will enable the heat source unit to supply power to TB7, or an extra power supply unit PAC-SC51KUA should be used. The transmission cable (above 1.25mm^2 , shielded, CVVS/CPEVS/MVVS) among Heat source units and system controllers is called central control transmission cable. The shield wire of the central control transmission cable must be grounded at the Heat source unit whose CN41 is changed to CN40. When the power supply unit PAC-SC51KUA is used, connect the shielded cable to the ground terminal on the PAC-SC51KUA.
 - MA R/C transmission cable ($0.3\text{--}1.25\text{mm}^2$) must be less than 200m in length, while ME R/C transmission cable ($0.3\text{--}1.25\text{mm}^2$) must be less than 10m in length. But transmission cable to the ME R/C can be extend using a M-NET cable ($\geq 1.25\text{mm}^2$) when the length is counted in the M-Net length.
 - To wire PAC-YT53CRAU, use a wire with a diameter of 0.3mm^2 [AWG 22].
 - MA remote controller and ME remote controller should not be grouped together.
 - If using 1 or 2 (main/sub) MA remote controller to control more than 1 Indoor unit, use MA transmission cable to connect all the TB15 terminals of the Indoor units. It is called "Grouping".
If using 1 or 2 (main/sub) ME remote controller control more than 1 indoor unit, set address to Indoor unit and ME remote controller. For the method, refer to 2-4. "Address setting".
 - Indoor board consumes power from TB3. The power balance should be considered according to System Design 2-3 "System configuration restrictions".
 - If Transmission booster is needed, be sure to connect the shield wires to the both sides to the booster.
 - The critical current for choosing power source equipment is approximate 1.4 times of total rated current of the Heat source unit(s) or Indoor unit(s).
 - When System controller (SC) is connected to the system, turn the SW2-1 on.
 - The phases of electricity power must be confirmed to be right used. Phase-reverse, or phase-missing could break the controllers.



Symbol	Model	Minimum Wire thickness	
		Power wire <mm ² /AWG>	G wire <mm ² /AWG>
BKC	Breaker capacity	PQHY-P72ZLMU-A	2.1/14
OCP	Over-current protector	PQHY-P96ZLMU-A	2.1/14
NFB	Non-fuse breaker	PQHY-P120ZLMU-A	2.1/14
HU	Heat source unit	PQHY-P144ZLMU-A	3.3/12
IU	Indoor unit	PQHY-P168ZLMU-A	5.3/10
SC	System controller	PQHY-P192ZLMU-A	5.3/10
MA R/C	MA remote controller		
ME R/C	ME remote controller		

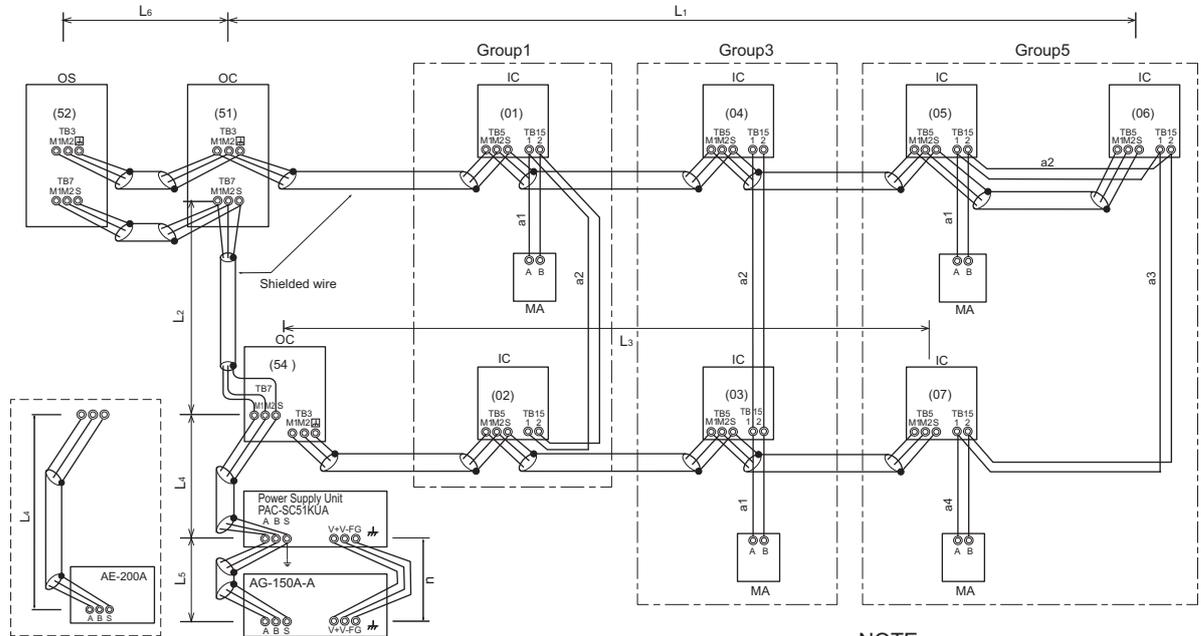
2-1. Transmission cable length limitation

2-1-1. Using MA Remote controller

MA remote controller refers to Simple MA remote controller and wireless remote controller.

Long transmission cable causes voltage down, therefore, the length limitation should be obeyed to secure proper transmission.

Max. length via Heat source (M-NET cable)	$L1+L2+L3, L1+L2+L4+L5, L3+L4+L5, L6+L2+L3, L6+L2+L4+L5$	$\leq 500\text{m}[1640\text{ft.}]$	1.25mm ² [AWG16] or thicker
Max. length to Heat source (M-NET cable)	$L1+L6, L3, L2+L4+L6, L5$	$\leq 200\text{m}[656\text{ft.}]$	1.25mm ² [AWG16] or thicker
Max. length from MA to Indoor for each group	$a1+a2, a1+a2+a3+a4$	$\leq 200\text{m}[656\text{ft.}]$	0.3-1.25 mm ² [AWG22-16]
24VDC to AG-150A-A	n	$\leq 50\text{m}[164\text{ft.}]$	0.75-2.0 mm ² [AWG18-14]



OC, OS: Heat source unit controller; IC: Indoor unit controller; MA: MA remote controller

NOTE
Do not daisy-chain remote controllers.

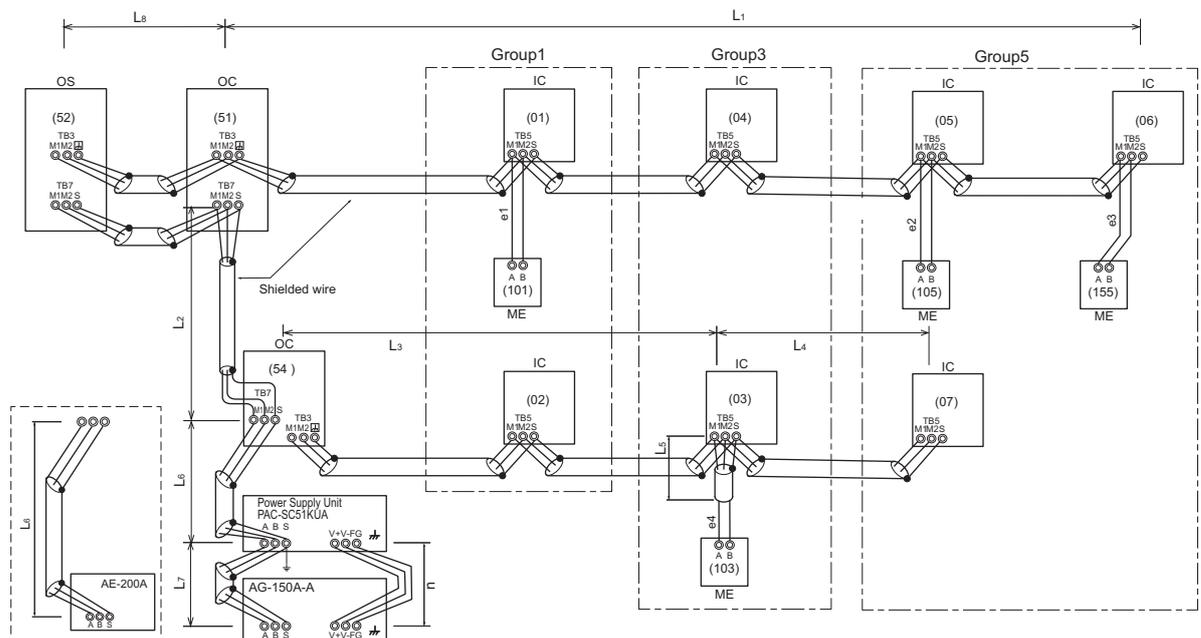
2-1-2. Using ME Remote controller

ME remote controller refers to Smart ME Controller.

Long transmission cable causes voltage down, therefore, the length limitation should be obeyed to secure proper transmission.

Max. length via Heat source (M-NET cable)	$L1+L2+L3+L4, L1+L2+L6+L7, L1+L2+L3+L5, L3+L4+L6+L7, L8+L2+L3+L4, L8+L2+L3+L5, L8+L2+L6+L7$	$\leq 500\text{m}[1640\text{ft.}]$	1.25mm ² [AWG16] or thicker
Max. length to Heat source (M-NET cable)	$L1+L8, L3+L4, L2+L6+L8, L7, L3+L5$	$\leq 200\text{m}[656\text{ft.}]$	1.25mm ² [AWG16] or thicker
Max. length from ME to Indoor	$e1, e2+e3, e4$	$\leq 10\text{m}[32\text{ft.}]^*1$	0.3-1.25 mm ² [AWG22-16]^*1
24VDC to AG-150A-A	n	$\leq 50\text{m}[164\text{ft.}]$	0.75-2.0 mm ² [AWG18-14]

*1. If the length from ME to Indoor exceed 10m, use 1.25 mm² [AWG16] shielded cable, but the total length should be counted into Max. length via Heat source.



OC, OS: Heat source unit controller; IC: Indoor unit controller; ME: ME remote controller

NOTE
Do not daisy-chain remote controllers.

2-2. Transmission cable specifications

	Transmission cables (Li)	ME Remote controller cables	MA Remote controller cables
Type of cable	Shielding wire (2-core) CVVS, CPEVS or MVVS	Sheathed 2-core cable (unshielded) CVV	
Cable size	More than 1.25mm ² [AWG16]	0.3~1.25mm ² [AWG22~16]	0.3~1.25mm ² [AWG22~16]*1
Remarks	—	When 10m [32ft] is exceeded, use cables with the same specification as transmission cables.	Max length : 200m [656ft]

*1 To wire PAC-YT53CRAU, use a wire with a diameter of 0.3 mm² [AWG22]

CVVS, MVVS: PVC insulated PVC sheathed shielded control cable
CPEVS: PE insulated PVC sheathed shielded communication cable
CVV: PVC insulated PVC sheathed control cable

2-3. System configuration restrictions

2-3-1. Common restrictions for the CITYMULTI system

For each Outdoor/Heat source unit, the maximum connectable quantity of Indoor unit is specified at its Specifications table.

- A) 1 Group of Indoor units can have 1-16 Indoor units;
- B) Maximum 2 remote controllers for 1 group;
 - *MA/ME remote controllers cannot be present together in 1group.
 - *To wire PAC-YT53CRAU, use a wire with a diameter of 0.3 mm² [AWG22]
- C) 1 LOSSNAY unit can interlock maximum 16 Indoor units; 1 Indoor unit can interlock only 1 LOSSNAY unit.
- D) Maximum 3 System controllers are connectable when connecting to TB3 of the Outdoor/Heat source unit.
- E) Maximum 6 System controllers are connectable when connecting to TB7 of the Outdoor/Heat source unit, if the transmission power is supplied by the Outdoor/Heat source unit.
 - (Not applicable to the PUMY model and PUHY/PURY-TLMU/TKMU model)
- F) 4 System controllers or more are connectable when connecting to TB7 of the Outdoor/Heat source unit, if the transmission power is supplied by the power supply unit PAC-SC51KUA. Details refer to 2-3-3-C.
 - *System controller connected as described in D) and E) would have a risk that the failure of connected Outdoor/Heat source unit would stop power supply to the System controller.

2-3-2. Ensuring proper communication power and the number of connected units for M-NET

In order to ensure proper communication among Outdoor/Heat source unit, Indoor unit, LOSSNAY, and Controllers, the transmission power situation for the M-NET should be observed. In some cases, Transmission booster should be used. Taking the power consumption of Indoor unit sized P06-P54 as 1, the equivalent power consumption or supply of others are listed at Table 1 and Table 2.

Both the transmission line for centralized controller and indoor-outdoor transmission line must meet the conditions listed below. (Both conditions a) and b) must be met.)

- a) [Total equivalent power consumption] ≤ [The equivalent power supply]
- b) [Total equivalent number of units] ≤ [40]

Table 1 The equivalent power consumption and the equivalent number of units

Category	Model	The equivalent power consumption	The equivalent number of units
Indoor unit	Sized P06-P54	1	1
	Sized P72, P96	2	2
BC controller	CMB	2	1
PWFY	P36NMU-E-BU	6	1
	P36NMU-E2-AU	1	1
	P72NMU-E2-AU	5	1
MA remote controller/LOSSNAY	PAC-YT53CRAU PAR-FA32MA LGH-F-RX5-E1 PZ-60DR-E PZ-41SLB	0	0
LOSSNAY remote controller	PZ-52SF	0.25	1
ME remote controller	PAR-U01MEDU PAC-IF01AHC-J	0.5	1
System controller	AE-200A AE-50A EW-50A	0	0
	AG-150A-A EB-50GU-A	0.5	1
	TC-24B	1.5	5
	PAC-YG60MCA PAC-YG66DCA PAC-YG63MCA	0.25	1
ON/OFF controller	PAC-YT40ANRA	1	1
MN converter	CMS-MNG-E	2	1
Outdoor/Heat source unit	TB7 power consumption	0	0
M-NET adapter	MAC-333IF-E	0	0
	PAC-IF01MNT-E	1	2

Table 2 The equivalent power supply

Category	Model	The equivalent power supply
Transmission Booster	PAC-SF46EPA	25
Power supply unit	PAC-SC51KUA	5
Expansion controller	PAC-YG50ECA	6
BM ADAPTER	BAC-HD150	6
System controller	AE-200A/AE-50A	0 *1
	EW-50A	1.5 *1
Outdoor/Heat source unit	Connector TB3 and TB7 total *	32 (except S series)/12 (S series)
	Connector TB7 only	6 (except S series and TLMU/TKMU)
	Connector TB7 only (TLMU/TKMU)	0

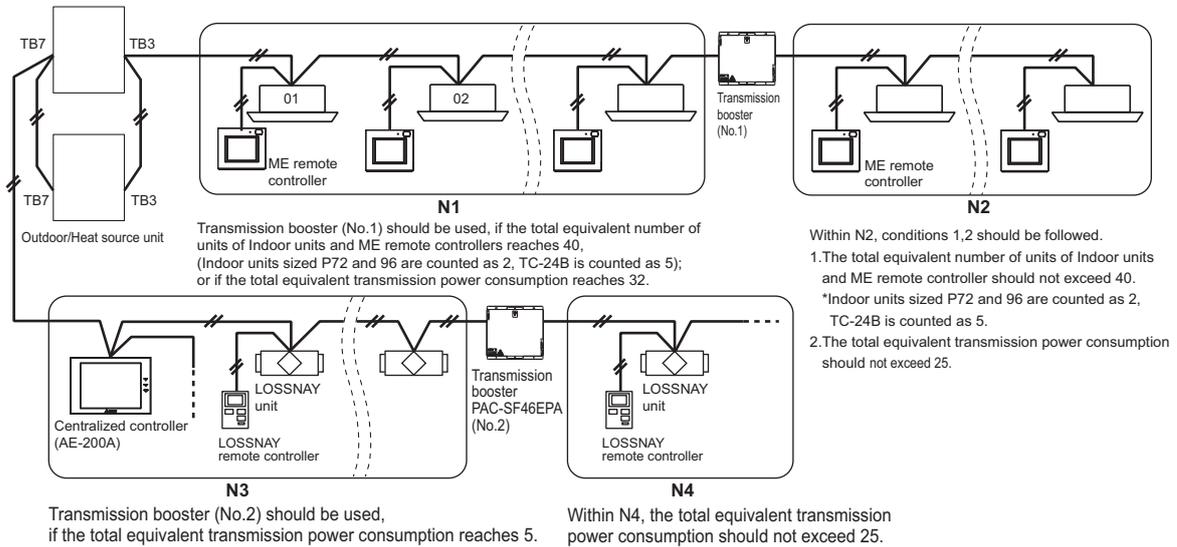
*If PAC-SC51KUA is used to supply power at TB7 side, no power supply need from Outdoor/Heat source unit at TB7, Connector TB3 itself will therefore have 32. Not applicable to the PUMY model.

*1 AE-200A/AE-50A/EW-50A has a built-in function to supply power to the M-NET transmission line. The amount of power that an AE-200A or an AE-50A can supply is equivalent to the power required by an MN converter (CMS-MNG-E) that is used for maintenance. An MN converter is connectable to EW-50A only when the equivalent power consumption is less than 1.5.

With the equivalent power consumption values and the equivalent number of units in Table 1 and Table 2, PAC-SF46EPA can be designed into the air-conditioner system to ensure proper system communication according to (A), (B), (C).

- (A) Firstly, count from TB3 at TB3 side the total equivalent number of units of Indoor units, ME remote controller, and System controllers. If the total equivalent number of units reaches 40, a PAC-SF46EPA should be set. In this case, Indoor units sized P72 and 96 are counted as 2, TC-24B is counted as 5, but MA remote controller(s), PZ-60DR-E, PZ-41SLB, and PZ-52SF are NOT counted.
- (B) Secondly, count from TB7 side to TB3 side the total transmission power consumption. If the total power consumption reaches 32, a PAC-SF46EPA should be set. Yet, if a PAC-SC51KUA or another controller with a built-in power supply, such as PAC-YG50ECA, is used to supply power at TB7 side, count from TB3 side only.
- (C) Thirdly, count from TB7 at TB7 side the total transmission power consumption, If the total power consumption reaches 6, a PAC-SF46EPA should be set. Also, count from TB7 at TB7 side the total equivalent number of units of System controllers, and so on. If the total equivalent number of units reaches 40, a PAC-SF46EPA should be set.

■ System example



2-3-3. Ensuring proper power supply to System controller

The power to System controller (excluding AE-200A, AE-50A, EW-50A, BAC-HD150, LM-AP) is supplied via M-NET transmission line. M-NET transmission line at TB7 side is called Centralized control transmission line while one at TB3 side is called Indoor-Outdoor/Heat source transmission line. There are 3 ways to supply power to the System controller .

- A) Connecting to TB3 of the Outdoor/Heat source unit and receiving power from the Outdoor/Heat source unit.
- B) Connecting to TB7 of the Outdoor/Heat source unit and receiving power from the Outdoor/Heat source unit.

(Not applicable to the PUMY model and PUHY/PURY-TLMU/TKMU model)

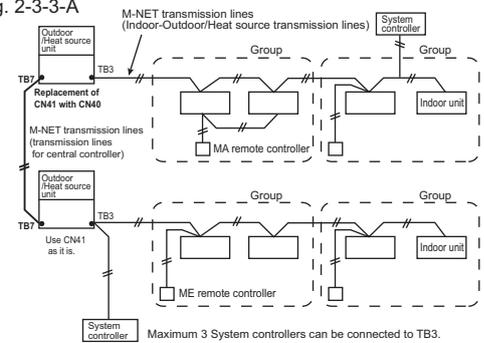
- C) Connecting to TB7 of the Outdoor/Heat source unit but receiving power from power supply unit PAC-SC51KUA.

* System controllers (AE-200A, AE-50A, EW-50A, BAC-HD150, LM-AP) have a built-in function to supply power to the M-NET transmission lines, so no power needs to be supplied to the Outdoor/Heat source units or from PAC-SC51KUA.

2-3-3-A. When connecting to TB3 of the Outdoor/Heat source unit and receiving power from the Outdoor/Heat source unit.

Maximum 3 System controllers can be connected to TB3. If there is more than 1 Outdoor/Heat source unit, it is necessary to replace power supply switch connector CN41 with CN40 on one Outdoor/Heat source unit.

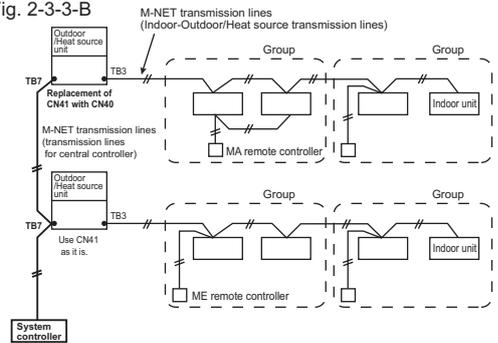
Fig. 2-3-3-A



2-3-3-B. When connecting to TB7 of the Outdoor/Heat source unit and receiving power from the Outdoor/Heat source unit. (Not applicable to the PUMY model and PUHY/PURY-TLMU/TKMU model)

Maximum 6 System controllers can be connected to TB7 and receiving power from the Outdoor/Heat source unit. (Not applicable to the PUMY model and PUHY/PURY-TLMU/TKMU model) It is necessary to replace power supply switch connector CN41 with CN40 on one Outdoor/Heat source unit.

Fig. 2-3-3-B



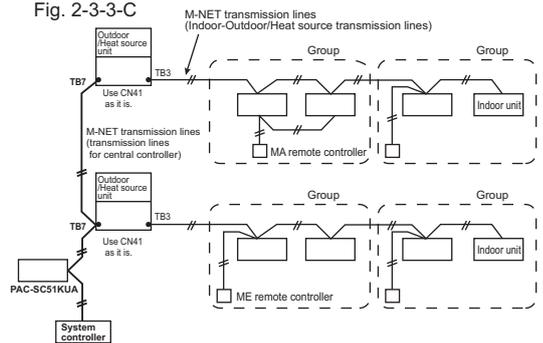
Note (only for PUHY/PURY model)

- When YLMU/YKMU Outdoor unit model is used, the male power supply connector can be connected to CN40, and the System controller can be connected to TB7 side.
- When the male power supply connector is connected from TLMU/TKMU Outdoor unit to CN40, the power is supplied to TB7 side even when the main power of the TLMU/TKMU outdoor unit is switched off, and the System controller may store an error in the error history and emit an alarm signal.
- If only LOSSNAY units or outdoor units in different refrigerant circuits are connected to TB7 side, the male power supply connector can be connected from TLMU/TKMU outdoor unit to CN40.

2-3-3-C. When connecting to TB7 of the Outdoor/Heat source unit but receiving power from PAC-SC51KUA.

When using PAC-SC51KUA to supply transmission power, the power supply connector CN41 on the Outdoor/Heat source units should be kept as it is. It is also a factory setting. 1 PAC-SC51KUA supports maximum 1 AG-150A-A or 1 EB-50GU-A unit due to the limited power 24VDC at its TB3. However, 1 PAC-SC51KUA supplies transmission power at its TB2 equal to 5 Indoor units, which is referable at Table 2. If PZ-52SF, System controller, ON/OFF controller connected to TB7 consume transmission power more than 5 (Indoor units), Transmission booster PAC-SF46EPA is needed. PAC-SF46EPA supplies transmission power equal to 25 Indoor units.

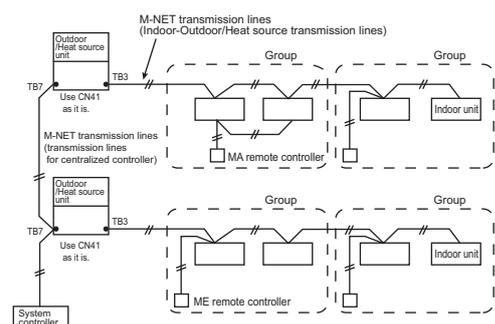
Fig. 2-3-3-C



CAUTION

- AG-150A-A/EB-50GU-A*1 are recommended to connect to TB7 because it performs back-up to a number of data. In an air conditioner system has more than 1 Outdoor/Heat source units, AG-150A-A/EB-50GU-A receiving transmission power through TB3 or TB7 on one of the Outdoor/Heat source units would have a risk that the connected Outdoor/Heat source unit failure would stop power supply to AG-150A-A/EB-50GU-A and disrupt the whole system. When applying apportioned electric power function, AG-150A-A/EB-50GU-A are necessary to connected to TB7 and has its own power supply unit PAC-SC51KUA. Note: Power supply unit PAC-SC51KUA is for AG-150A-A/EB-50GU-A. *1: AG-150A-A is an example model of system controllers.
- How to connect system controllers (AE-200A, AE-50A, EW-50A, BAC-HD150, LM-AP) to a given system System controllers (AE-200A, AE-50A, EW-50A, BAC-HD150, LM-AP) have a built-in function to supply power to the M-NET transmission lines, so no power needs to be supplied to the M-NET transmission lines from the Outdoor/Heat source units or from PAC-SC51KUA. Leave the power supply connector on the Outdoor/Heat source unit connected to CN41 as it is. Refer to 2-3-2 for information about the power-supply capacity of each system controller (EW-50A, BAC-HD150, LM-AP) to the low-level system controllers.

Fig. 2-3-3-D



2-3-4. Power supply to LM-AP

1-phase 208-230V AC power supply is needed.

The power supply unit PAC-SC51KUA is not necessary when connecting only the LM-AP. Yet, make sure to change the power supply changeover connector CN41 to CN40 on the LM-AP.

2-3-5. Power supply to expansion controller

1-phase 100-240VAC power supply is needed.

The power supply unit PAC-SC51KUA is not necessary.

The expansion controller supplies power through TB3, which equals 6 indoor units. (refer to Table 2)

2-3-6. Power supply to BM ADAPTER

1-phase 100-240VAC power supply is needed.

The power supply unit PAC-SC51KUA is not necessary when only BM ADAPTER is connected.

Yet, make sure to move the power jumper from CN41 to CN40 on the BM ADAPTER.

2-3-7. Power supply to AE-200A/AE-50A/EW-50A

1-phase 100-240VAC power supply is needed.

The power supply unit PAC-SC51KUA is not necessary when connecting only the AE-200A/AE-50A/EW-50A.

2-4. Address setting

2-4-1. Switch operation

In order to constitute CITY MULTI in a complete system, switch operation for setting the unit address No. and connection No. is required.

① Address No. of heat source unit, indoor unit and ME remote controller.

The address No. is set at the address setting board.

In the case of WR2 system, it is necessary to set the same No. at the branch No. switch of indoor unit as that of the BC controller connected. (When connecting two or more branches, use the lowest branch No.)

② Caution for switch operations

- Be sure to shut off power source before switch setting. If operated with power source on, switch can not operate properly.
- No units with identical unit address shall exist in one whole air conditioner system. If set erroneously, the system can not operate.

③ MA remote controller

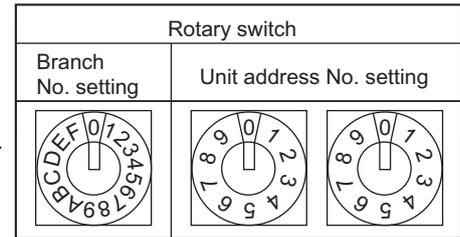
- When connecting only one remote controller to one group, it is always the main remote controller. When connecting two remote controllers to one group, set one remote controller as the main remote controller and the other as the sub remote controller.
- The factory setting is "Main".

PAC-YT53CRAU

Setting the dip switches

There are switches on the back of the top case. Remote controller Main/Sub and other function settings are performed using these switches. Ordinarily, only change the Main/Sub setting of SW1. (The factory settings are ON for SW1, 3, and 4 and OFF for SW2.)

SW No	SW contents Main	ON	OFF	Comment
1	Remote controller Main/Sub setting	Main	Sub	Set one of the two remote controllers at one group to "ON".
2	Temperature display units setting	Celsius	Fahrenheit	When the temperature is displayed in [Fahrenheit], set to "OFF".
3	Cooling/heating display in AUTO mode	Yes	No	When you do not want to display "Cooling" and "Heating" in the AUTO mode, set to "OFF".
4	Indoor temperature display	Yes	No	When you do not want to display the indoor temperature, set to "OFF".



2-4-2. Rule of setting address

Unit	Address setting	Example	Note
Indoor unit System control interface (MAC-333IF-E) A-M converter (PAC-IF01MNT-E)	01 ~ 50	 	Use the most recent address within the same group of indoor units. Make the indoor units address connected to the BC controller (Sub) larger than the indoor units address connected to the BC controller (Main). If applicable, set the sub BC controllers in an PQR system in the following order: (1) Indoor unit to be connected to the BC controller (Main) (2) Indoor unit to be connected to the BC controller (No.1 Sub) (3) Indoor unit to be connected to the BC controller (No.2 Sub) Set the address so that (1)<(2)<(3)
Heat source unit	51 ~ 99, 100 (Note1)	 	The smallest address of indoor unit in same refrigerant system + 50 Assign sequential address numbers to the heat source units in one refrigerant circuit system. OC and OS are automatically detected. (Note 2) * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
BC controller (Main)	52 ~ 99, 100	 	The address of heat source unit + 1 * Please reset one of them to an address between 51 and 99 when two addresses overlap. * The address automatically becomes "100" if it is set as "01~ 50"
BC controller (Sub)	52 ~ 99, 100	 	Lowest address within the indoor units connected to the BC controller (Sub) plus 50.
Local remote controller	ME, LOSSNAY Remote controller (Main)	1 Fixed  	The smallest address of indoor unit in the group + 100 * The place of "100" is fixed to "1"
	ME, LOSSNAY Remote controller (Sub)	1 Fixed  	The address of main remote controller + 50 * The address automatically becomes "200" if it is set as "00"
System controller	ON/OFF remote controller	  	The smallest group No. to be managed + 200 * The smallest group No. to be managed is changeable.
	AE-200A/AE-50A AG-150A-A EB-50GU-A EW-50A TC-24B	0 100 0 10 0 1	* TC-24B cannot be set to "000".
	PAC-YG50ECA	0 100 0 10 0 1	* Settings are made on the initial screen of AG-150A-A.
	BAC-HD150	0 100 0 10 0 1	* Settings are made with setting tool of BM ADAPTER.
	LMAP04U-E	2 Fixed  	
PI, AI, DIDO	PAC-YG60MCA	 	
	PAC-YG63MCA	 	
	PAC-YG66DCA	 	
LOSSNAY	01 ~ 50	 	After setting the addresses of all the indoor units, assign an arbitrary address.
PAC-IF01AHC-J	201 ~ 250	2 Fixed  	

Note1: To set the address to "100", set it to "50"

Note2: Heat source units OC and OS in one refrigerant circuit system are automatically detected.

OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.

2-4-3. System examples

Factory setting

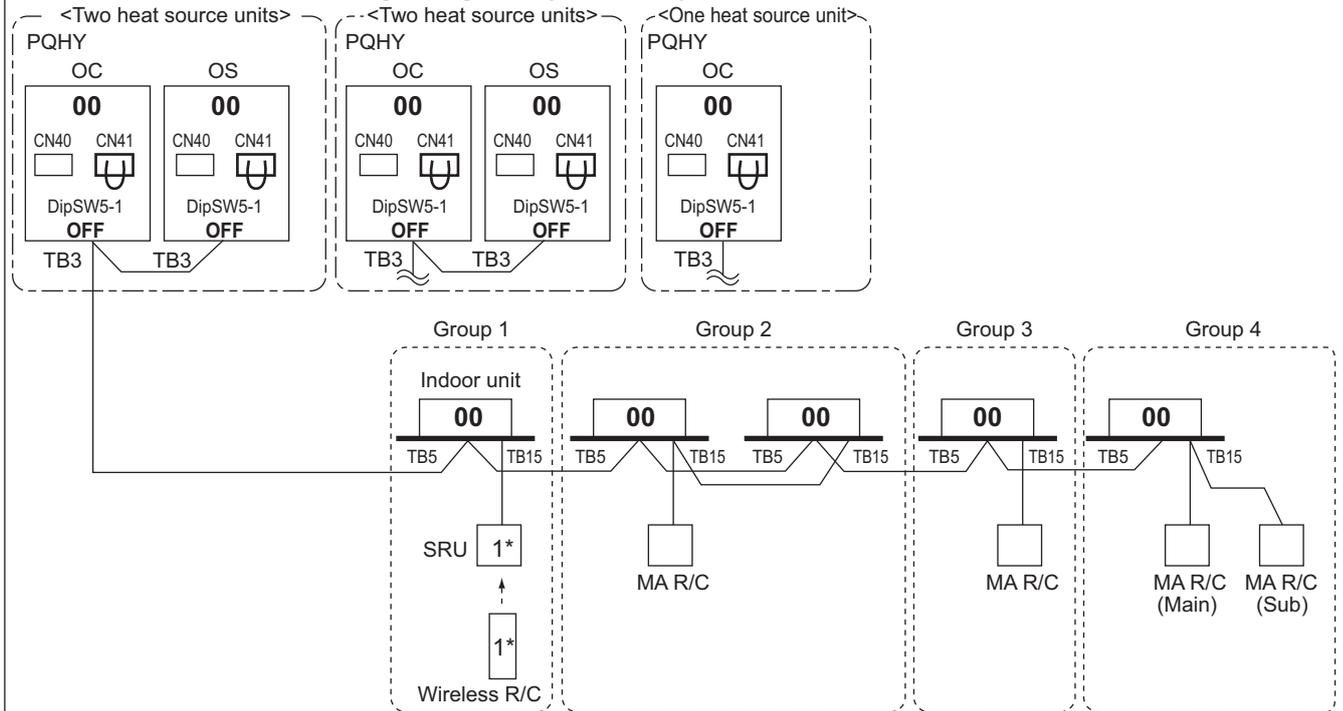
Original switch setting of the heat sources, indoors, controllers, LM-AP, and BM ADAPTER at shipment is as follows.

- Heat source unit : Address: 00, CN41: ON (Jumper), DipSW5-1: OFF
- Indoor unit : Address: 00
- ME remote controller : Address: 101
- LM-AP : Address: 247, CN41: ON (Jumper), DipSW1-2: OFF
- BM ADAPTER : Address: 000, CN41: ON (Jumper)
- AE-200A/AE-50A/EW-50A : Address: 000, CN21: ON (Jumper)

Setting at the site

- DipSW5-1(Heat source) : When the System Controller is used, all the Dip SW5-1 at the heat source units should be set to "ON". * Dip SW5-1 remains OFF when only LM-AP is used.
- DipSW1-2(LM-AP) : When the LM-AP is used together with System Controller, DipSW1-2 at the LM-AP should be set to "ON".
- CN40/CN41 : Change jumper from CN41 to CN 40 at heat source control board will activate central transmission power supply to TB7;
(Change jumper at only one heat source unit when activating the transmission power supply without using a power supply unit.)
Change jumper from CN41 to CN 40 at LM-AP/BM ADAPTER will activate transmission power supply to LM-AP/BM ADAPTER itself;
Power supply unit is recommended to use for a system having more than 1 heat source unit, because the central transmission power supply from TB7 of one of heat source units is risking that the heat source unit failure may let down the whole central control system.
- CN21(AE-200A/AE-50A/EW-50A) : Activates the power supply to M-NET transmission line from AE-200A/AE-50A/EW-50A (CN21: ON (power supplied), OFF (power not supplied))

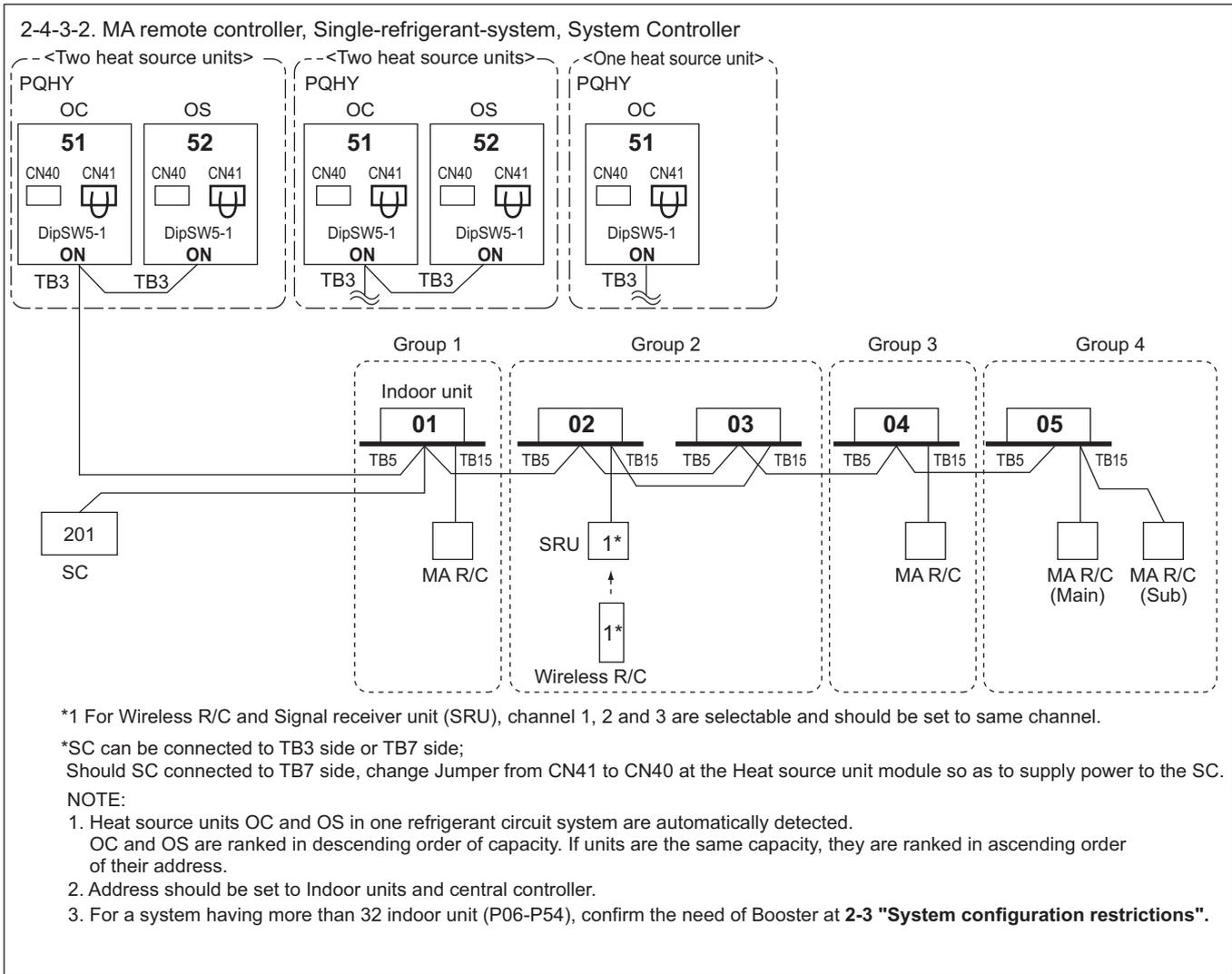
2-4-3-1. MA remote controller, Single-refrigerant-system, No System Controller



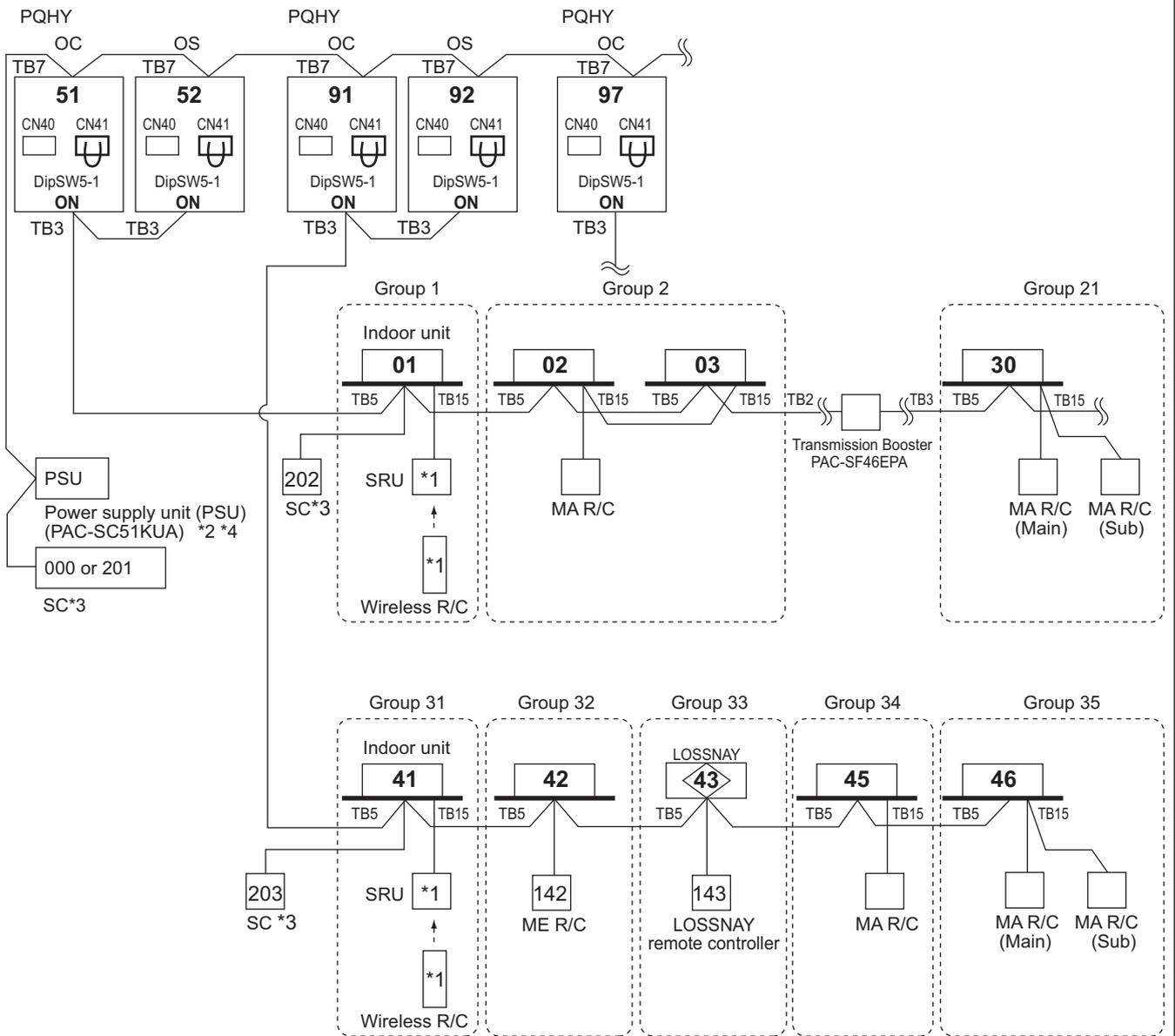
*1 For Wireless R/C and Signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

NOTE:

1. Heat source units OC and OS in one refrigerant circuit system are automatically detected.
OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.
2. No address setting is needed.
3. For a system having more than 32 indoor unit (P06-P54), confirm the need of Booster at 2-3 "System configuration restrictions".



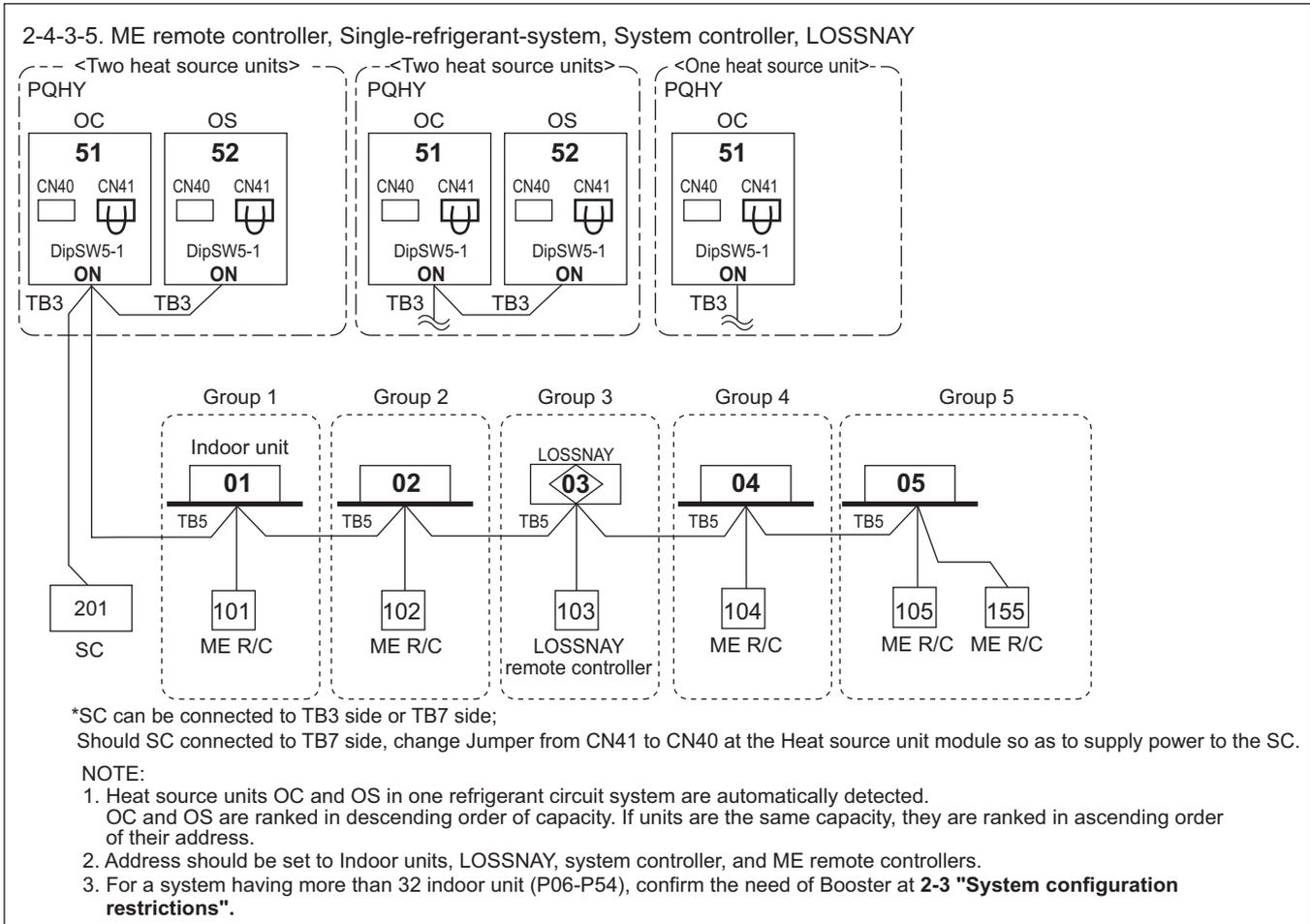
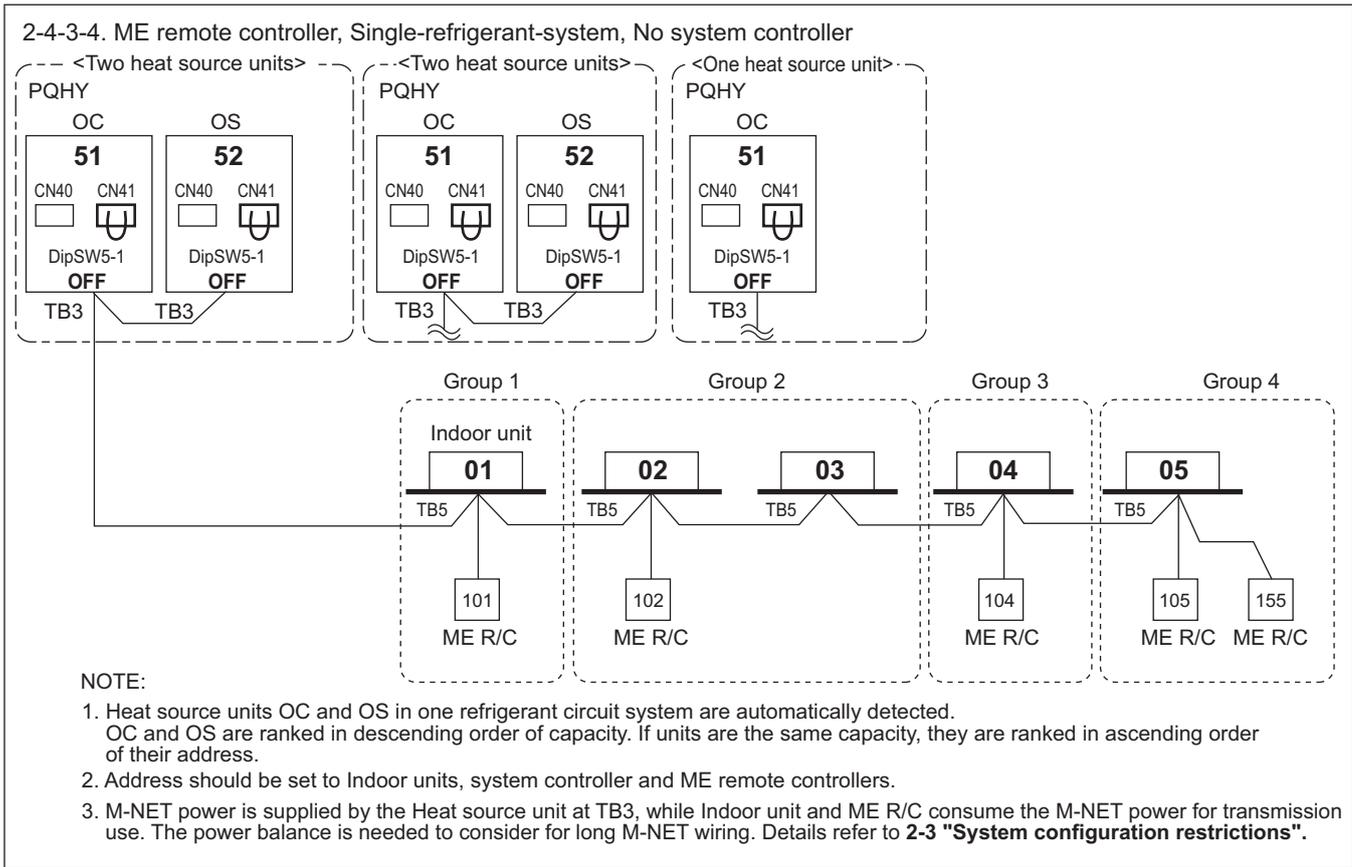
2-4-3-3. MA remote controller, Multi-refrigerant-system, System Controller at TB7/TB3 side, Booster for long M-NET wiring



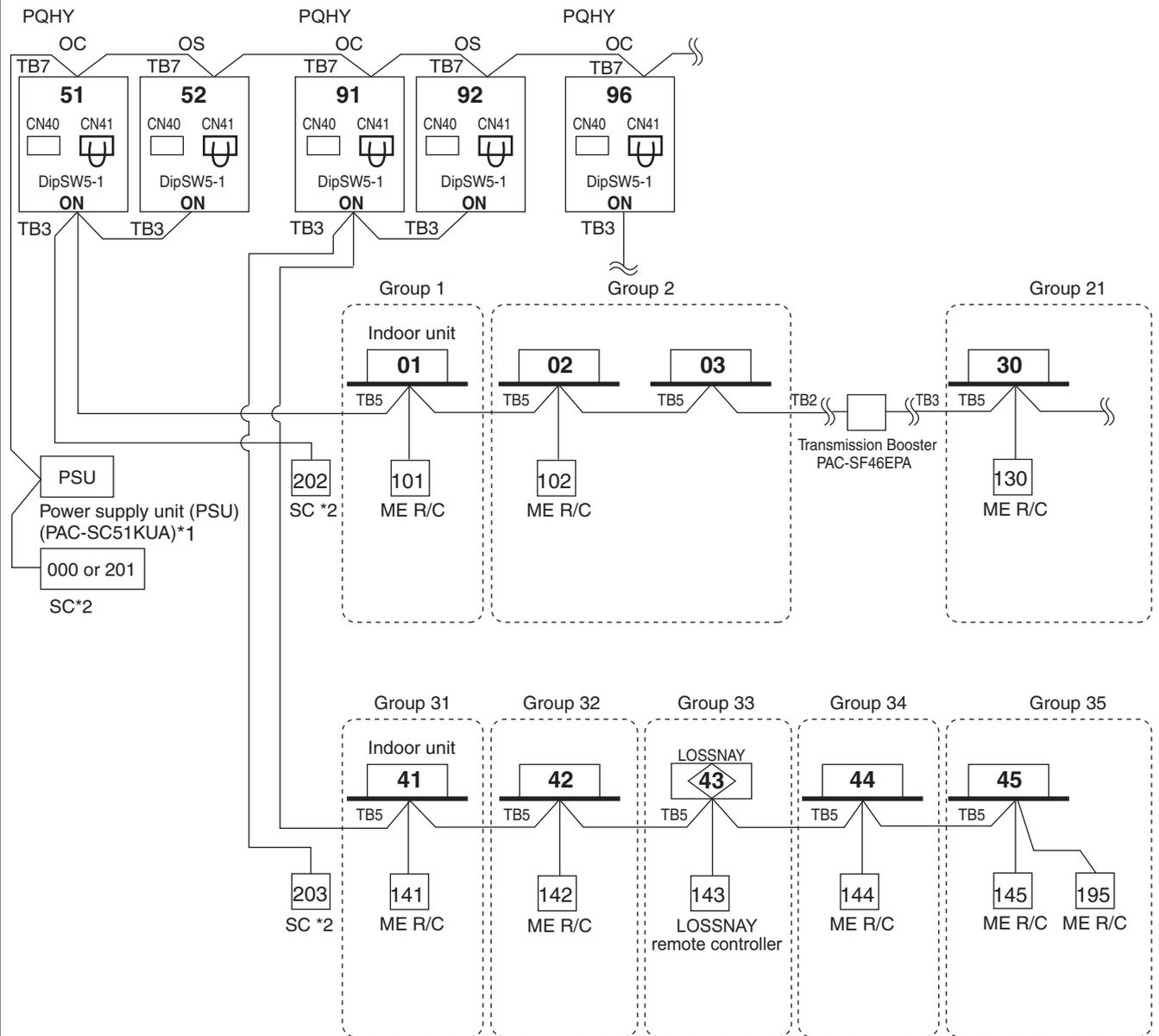
- *1 For Wireless R/C and Signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.
- *2 System controller should connect to TB7 at the Heat source unit and use power supply unit together in Multi-Refrigerant-System.
For AG-150A-A, 24VDC should be used with the PAC-SC51KUA.
For AE-200A, AE-50A, and EW-50A the power supply unit PAC-SC51KUA is unused.
- *3 When multiple system controllers are connected in the system, set the controller with more functions than others as a "main" controller and others as "sub".
AE-200A, AE-50A, EW-50A, BAC-HD150, and LM-AP are for exclusive use as a "main" system controller and cannot be used as a "sub" system controller. Make the setting to only one of the system controllers for "prohibition of operation from local remote controller".
- *4 The power supply unit is not necessary for AE-200A, AE-50A, EW-50A, BAC-HD150, and LM-AP.

NOTE:

1. Heat source units OC and OS in one refrigerant circuit system are automatically detected.
OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.
2. Address should be set to Indoor units, LOSSNAY and system controller.
3. M-NET power is supplied by the Heat source unit at TB3, while Indoor unit and ME remote controller consume the M-NET power for transmission use. The power balance is needed to consider for long M-NET wiring. Details refer to 2-3 "System configuration restrictions".



2-4-3-6. ME remote controller, Multi-refrigerant-system, System Controller at TB 7side, LOSSNAY, Booster for long M-NET wiring



*1 System controller should connect to TB7 at the Heat source unit and use power supply unit together in Multi-Refrigerant-System. For AG-150A-A, 24V DC should be used with the PAC-SC51KUA.

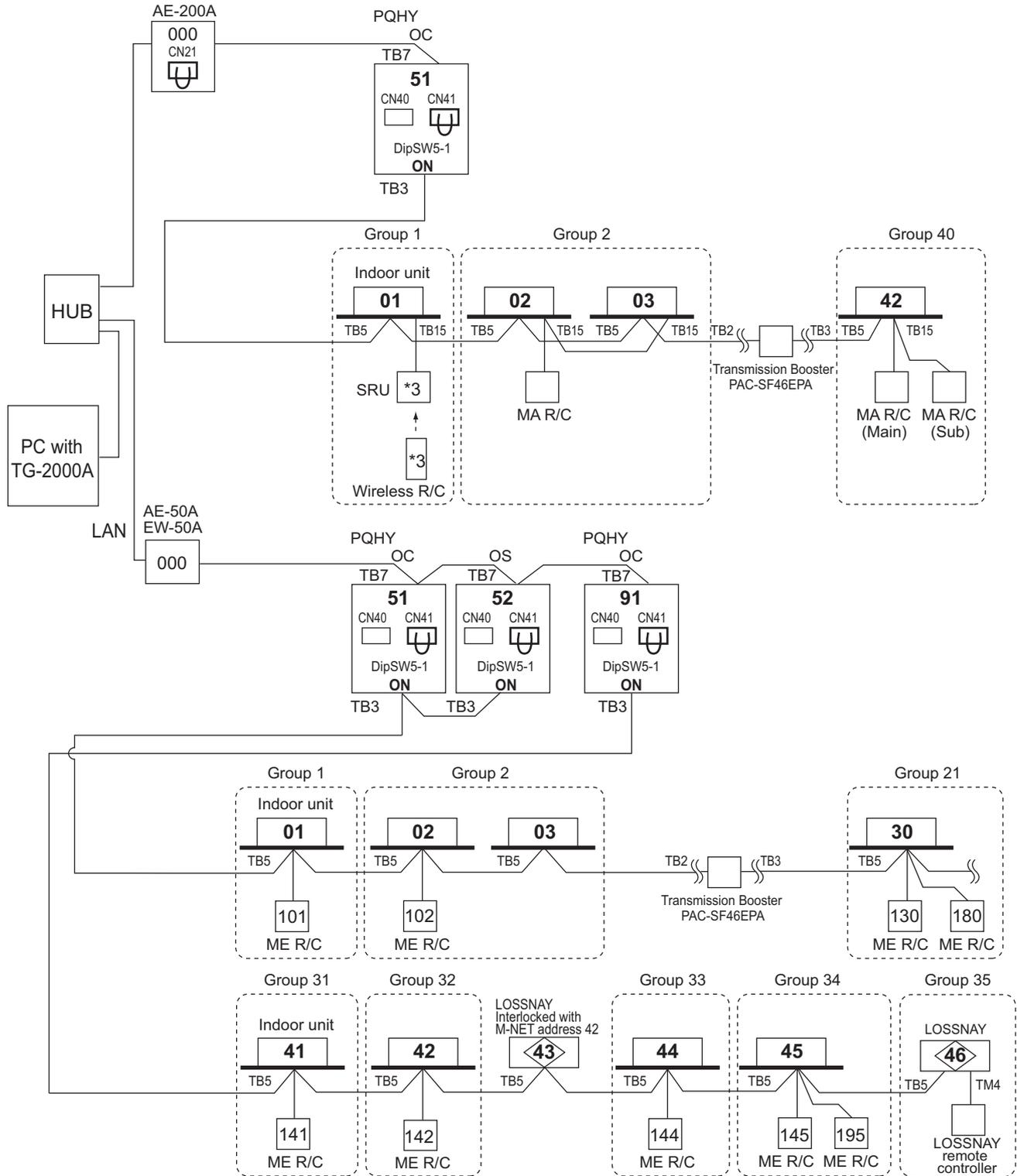
*2 When multiple system controllers are connected in the system, set the controller with more functions than others as a "main" controller and others as "sub".
 TC-24A, AG-150A-A, AE-200A, AE-50A, EW-50A, BAC-HD150 and LM-AP are for exclusive use as a "main" system controller and cannot be used as a "sub" system controller.
 Make the setting to only one of the system controllers for "prohibition of operation from local remote controller".

NOTE:

- Heat source units OC and OS in one refrigerant circuit system are automatically detected. OC and OS are ranked in descending order of capacity. If units are the same capacity, they are ranked in ascending order of their address.
- M-NET power is supplied by the Heat source unit at TB3, while Indoor unit and ME remote controller consume the M-NET power for transmission use. The power balance is needed to consider for long M-NET wiring. Details refer to 2-3 "System configuration restrictions".

2-4-3-7. TG-2000A(*1)+AE-200A/AE-50A/EW-50A

AE-200A can control max. 50 indoor units;
 TG-2000A can control max. 40 of AE-200A, AE-50A, and EW-50A;*2
 TG-2000A can control max. 2000 indoor units.



*1 TG-2000A (Ver.6.5 or later) supports AE-200A/AE-50A (Ver.7.10 or later).

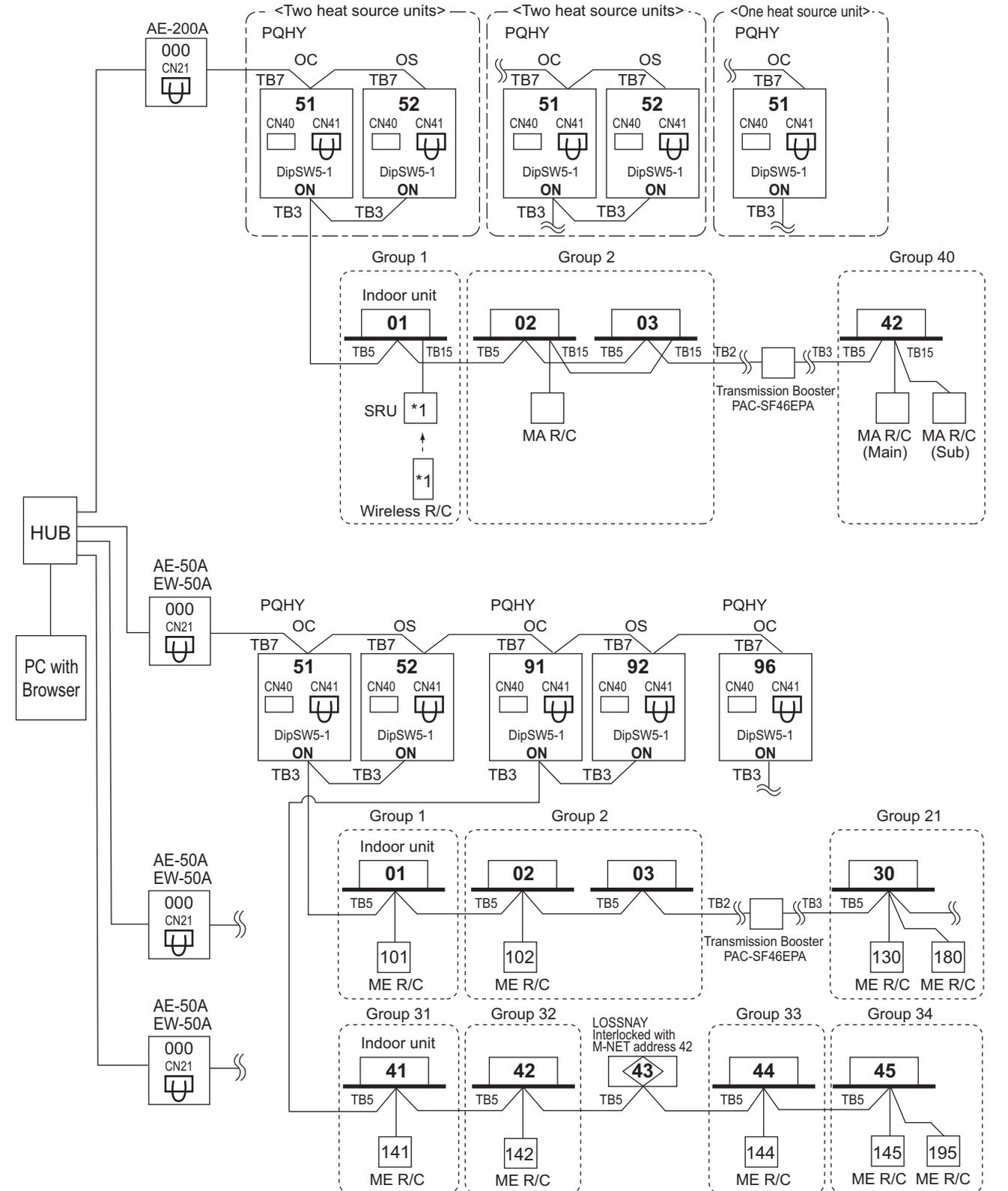
TG-2000A (Ver.6.60 or later) supports EW-50A.

*2 When AE-200A connected with AE-50A is connected, the number of AE-50A will be the maximum controllable number.

TG-2000A can control up to 40 AE-200A/AE-50A or AE-200A without AE-50A connection.

*3 For Wireless R/C and Signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

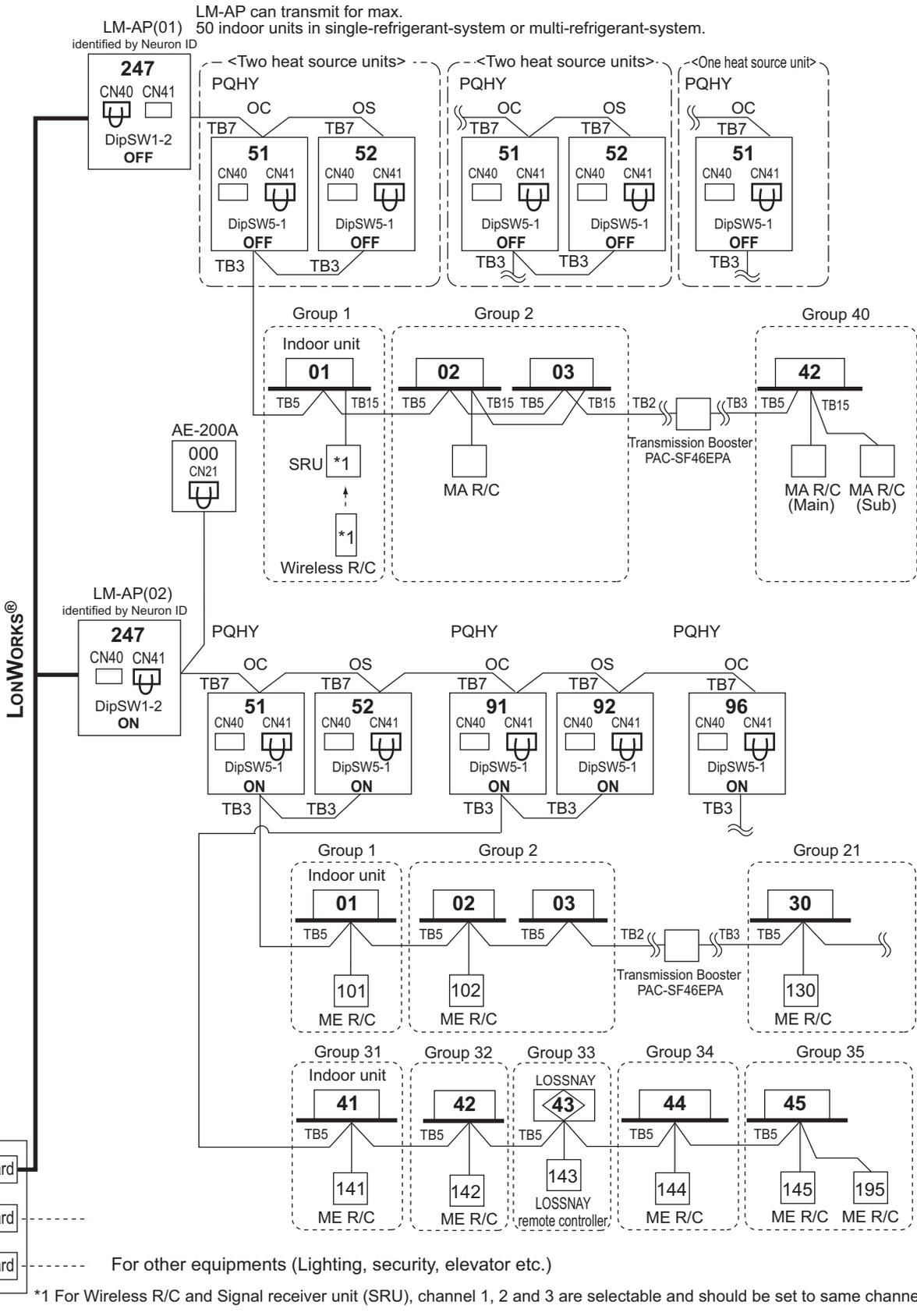
2-4-3-8. AE-200A + AE-50A, EW-50A
 AE-200A can control max. 200 indoor units/via AE-50A.



*1 For Wireless R/C and Signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

2-4-3-9. LM-AP

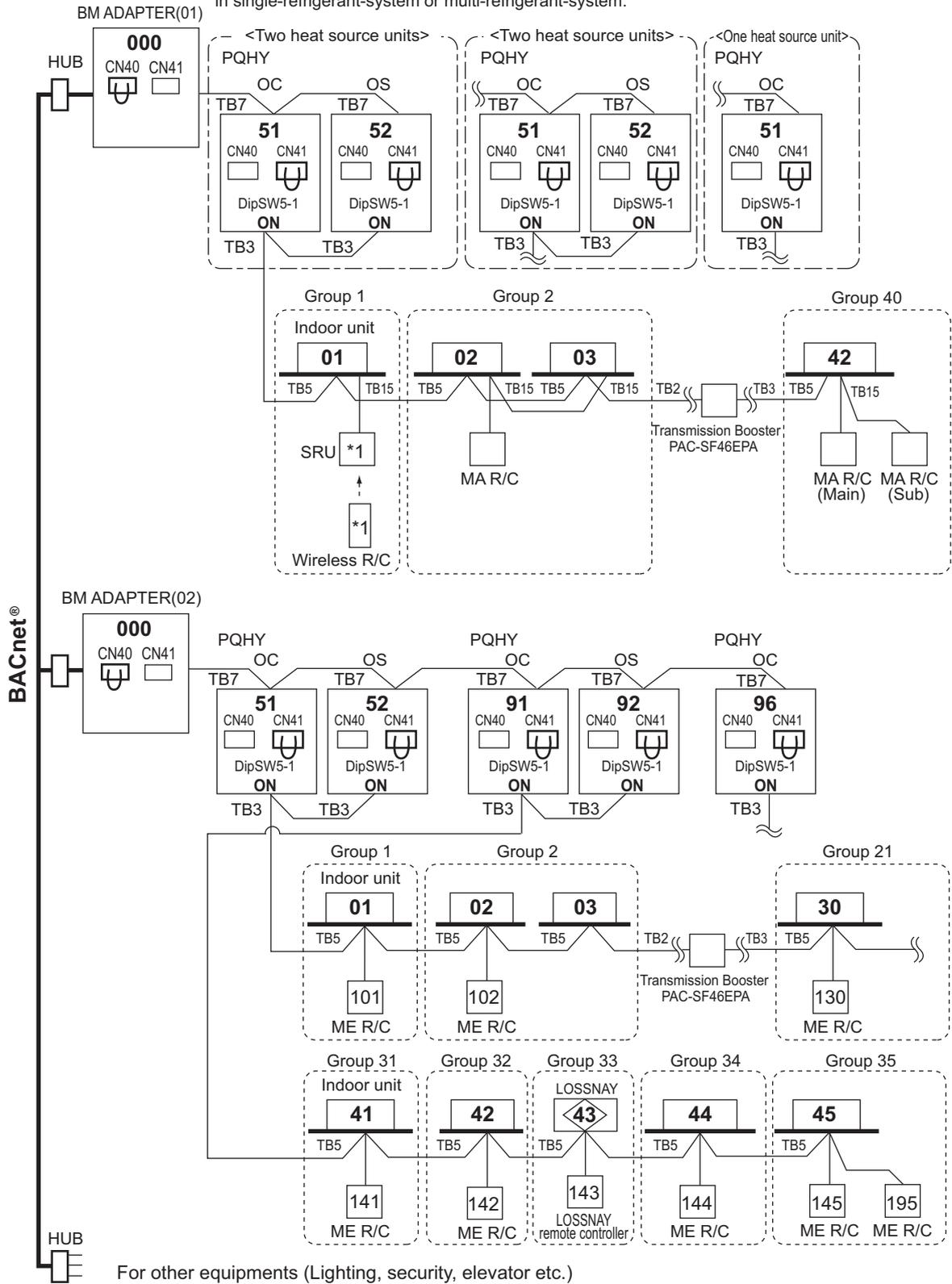
LM-AP can transmit for max. 50 indoor units;
 If system controller (SC) is used, DipSW1-2 at LM-AP and DipSW5-1 at Heat source unit should set to "ON".
 Change Jumper from CN41 to CN40 to activate power supply to LM-AP itself for those LM-AP connected without system controller (SC).



2-4-3-10. BM ADAPTER

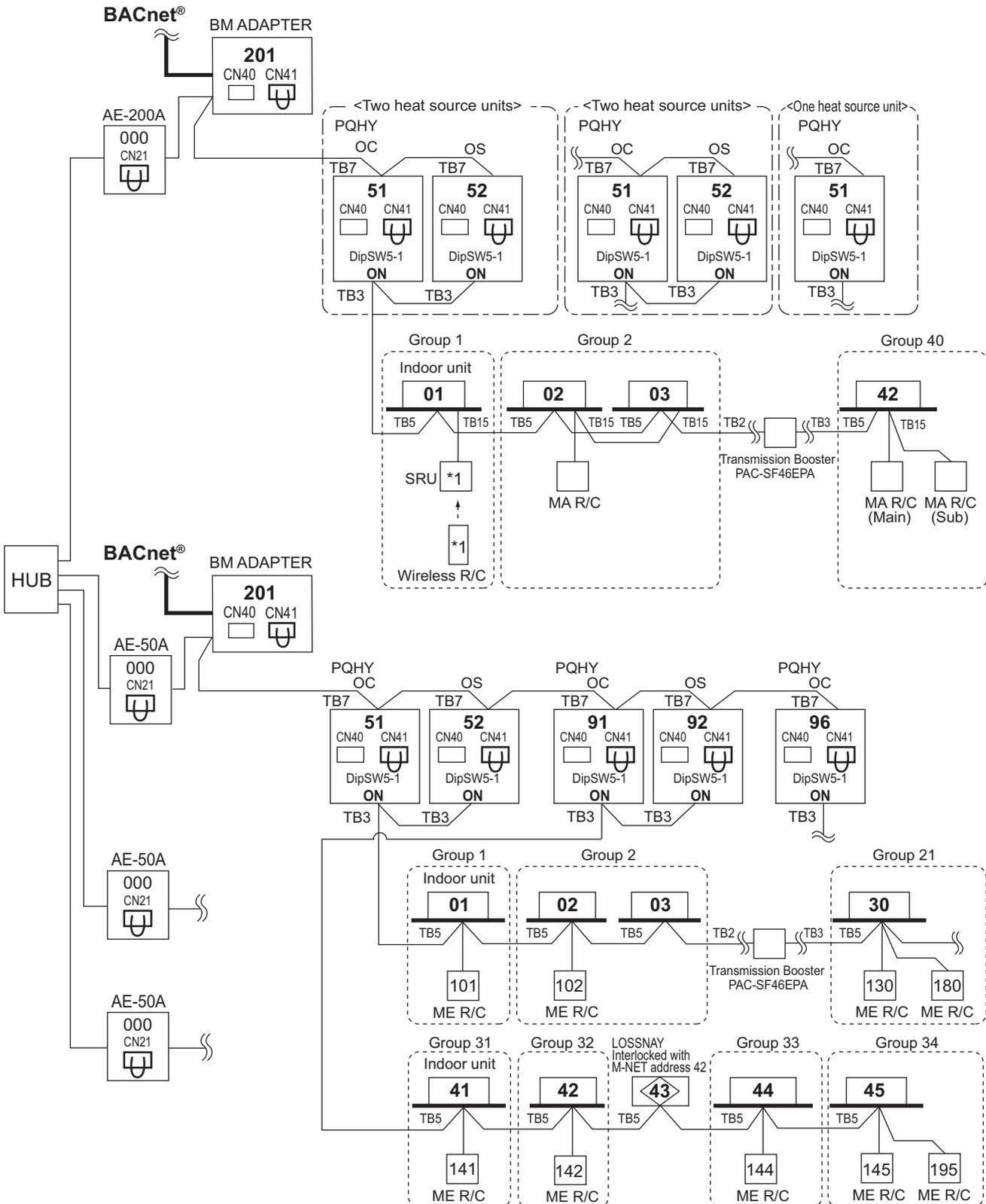
BM ADAPTER can transmit for max. 50 indoor units;
 Change Jumper from CN41 to CN40 to activate power supply to BM ADAPTER itself for those BM ADAPTER connected without the power supply unit.

BM ADAPTER can transmit for max. 50 indoor units in single-refrigerant-system or multi-refrigerant-system.



*1 For Wireless R/C and Signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

2-4-3-11. BM ADAPTER+AE-200A/AE-50A



NOTE

• It is not necessary to connect the M-NET transmission line to the TB3 on BM ADAPTER. Leave the power jumper of BM ADAPTER connected to CN41.

*1 For Wireless R/C and Signal receiver unit (SRU), channel 1, 2 and 3 are selectable and should be set to same channel.

*2 Consult your dealer for restrictions when connecting both AE-200A/AE-50A and BM ADAPTER.

*3 In a system that uses AE-200A and/or AE-50A, each BM-ADAPTER must be connected to the M-NET line.

3-1. R410A Piping material

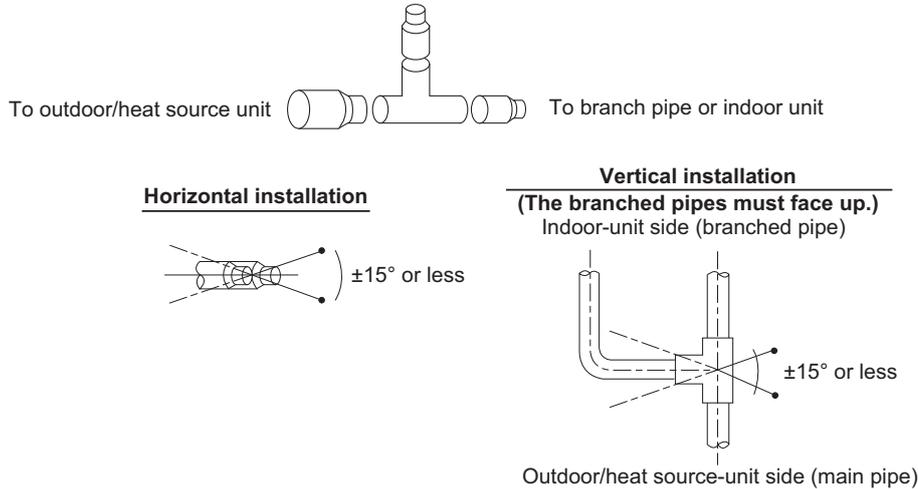
The maximum operation pressure of R410A air conditioner is 4.15 MPa [601 psi]. The refrigerant piping should ensure the safety under the maximum operation pressure. You shall follow the local industrial standard.

Procedures for installing the branched pipes

Refer to the instructions that came with the branched pipe kit (separately sold) for details.

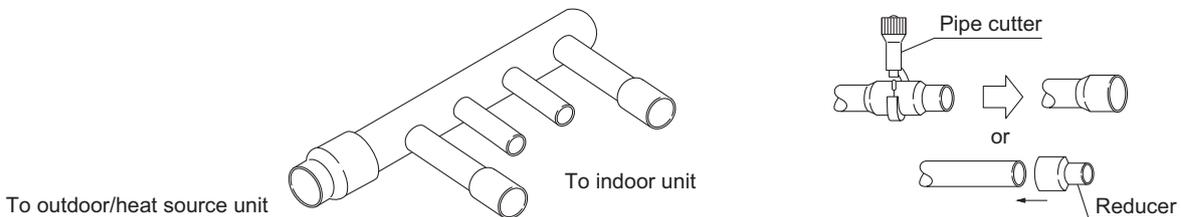
[1] Branches on the indoor-unit side

■Joint



- Restrictions for installing the joint described here only apply to CMY-Y202S-G2 and CMY-Y302S-G2 in the gas line.
- CMY-Y202S-G2 and CMY-Y302S-G2 in the gas line must be installed horizontally (see figure above) or with the branched pipes facing up.
- If the size of the refrigerant pipe that is selected by following the instructions under 3-2. Piping Design does not match the size of the joint, use a reducer to connect them. A reducer is included in the kit.

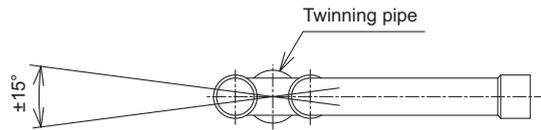
■Header



- No restrictions apply to the installation of the header.
- If the size of the refrigerant pipe that is selected by following the instructions under 3-2. Piping Design does not match the size of the header, cut the pipe to an appropriate size using a pipe cutter, or use a reducer to connect them.
- If the number of header branches exceeds the number of pipes to be connected, cap the unused header branches. Caps are included in the kit.

[2] Branches on the outdoor/heat source-unit side

Note. Refer to the figure below for the installation position of the twinning pipe.

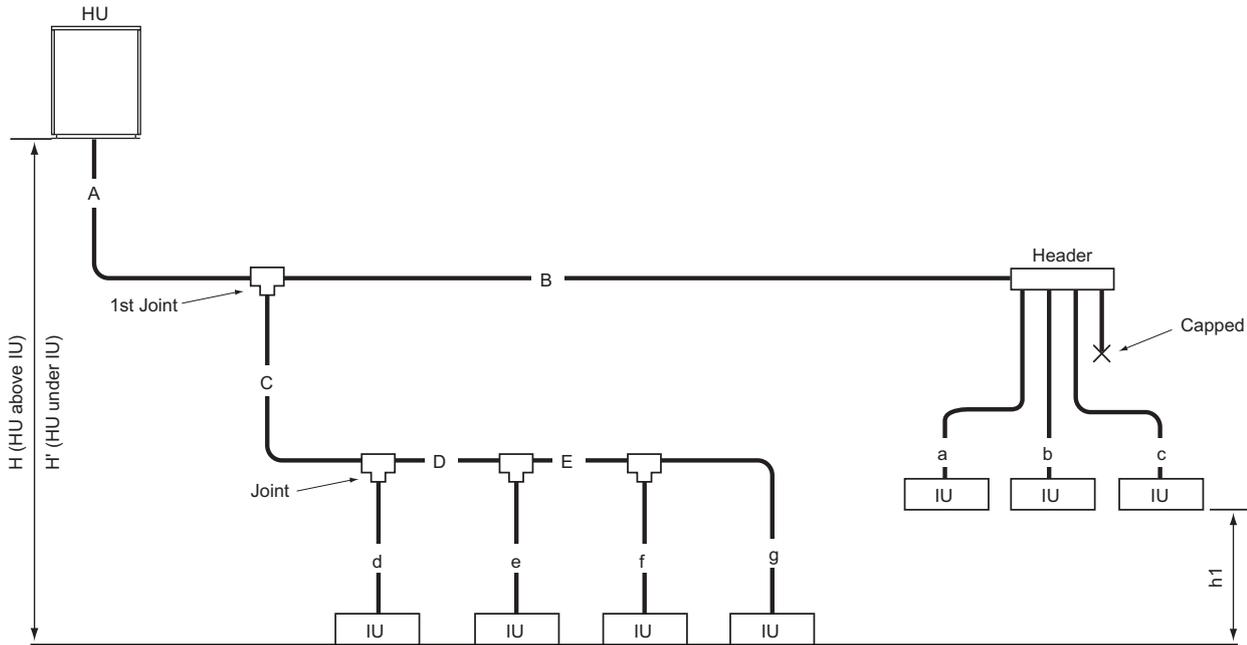


Slope of the twinning pipes are at an angle within $\pm 15^\circ$ to the horizontal plane.

- Inclination of the branched pipes
The inclination of the branched pipes must be $\pm 15^\circ$ or less against the horizontal plane. Excessive inclination of the branched pipes may damage the unit.
- Minimum length of the straight section of the pipe before the branched pipes
Always use the pipes supplied in the branched pipe kit, and make sure the straight section of the pipe immediately before it connects to the branched pipe is at least 500 mm. Failure to do so may damage the unit.

3-2. Piping Design

Selecting refrigerant pipes



IU: Indoor unit, HU: heat source unit

1. Selecting joints

Select joints from Table 4-1 [Selection criteria for joints] based on the total capacity of indoor units on the downstream side. When selecting the first joint for the system to which the heat source unit listed in Table 4-2 [See the table below for the first joint of the heat source unit described below.] is connected, select the first joint from Table 4-2.

2. Selecting headers

Select headers from Table 5 [Header selection rule] based on the number of indoor units to be connected. Refer to Table 5, which shows the total capacity limits, for the indoor units to be connected on the downstream side. When connecting a header directly to the heat source unit, select the header by referring to the notes in Table 5.

*The piping cannot be branched on the downstream of the header.

3. Selecting refrigerant pipe sizes

(1) Between heat source unit and the 1st joint [A]

Select the appropriate size pipes for the selected heat source unit from Table 1 [Piping "A" size selection rule].

(2) Between joints [B, C, D, and E]

Select the appropriate size pipes from Table 2 [Piping "B", "C", "D", ... size selection rule] based on the total capacity of indoor units on the downstream side.

(3) Between joints and indoor units [a, b, c, d, e, f, and g]

Select the appropriate size pipes from Table 3 [Piping "a", "b", "c", "d", ... size selection rule] based on the capacity of indoor units.

(4) After selecting the pipe sizes in accordance with steps (1) through (3) above, if the size of the pipes on the downstream is larger than that on the upstream, it is not necessary to be bigger than the upstream one.

4. Checking the refrigerant charge

Calculate the amount of refrigerant to be added based on the pipe sizes selected in Items 1 through 3 above, and make sure that the total amount of the initial charge and the additional charge combined will not exceed the maximum allowable refrigerant charge amount.

If this amount exceeds the maximum allowable amount, redesign the system (i.e., piping length) so that the total refrigerant charge will not exceed the maximum allowable amount.

3-2-1. PQHY-P72-192ZLMU Piping

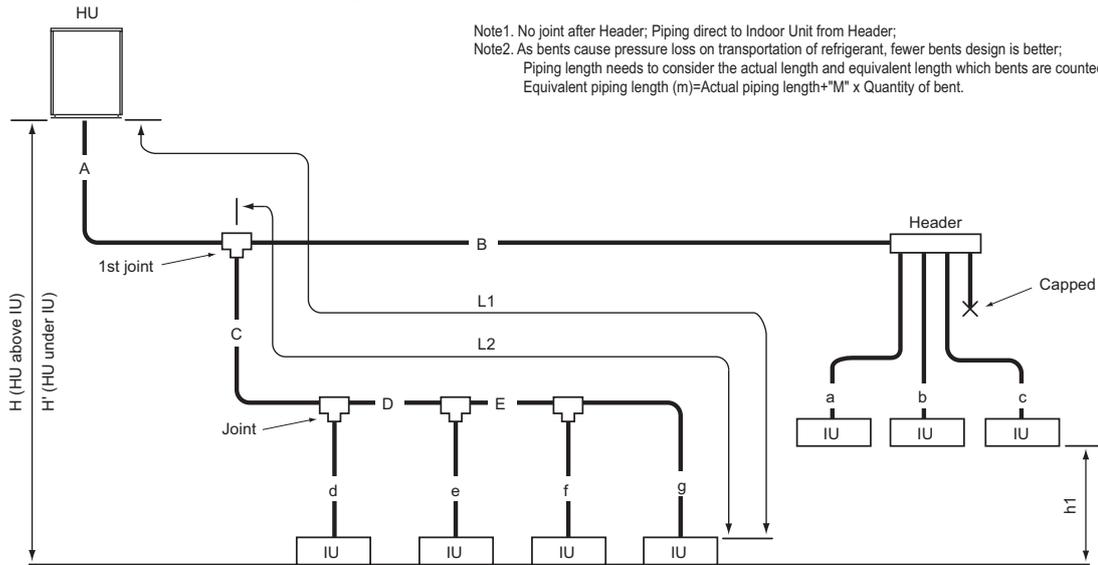


Fig. 3-2-1A Piping scheme

IU : Indoor unit , HU : Heat source unit

Piping length		(m [ft.])		Bent equivalent length "M"	
Item	Piping in the figure	Max. length	Max. equivalent length	Heat source Model	M (m/bends [ft./bends])
Total piping length	A+B+C+D+E+a+b+c+d+e+f+g	*1	-	PQHY-P72ZLMU	0.35 [1.15]
Farthest IU from HU (L1)	A+C+D+E+g / A+B+c	165 [541]	190 [623]	PQHY-P96ZLMU	0.42 [1.38]
Farthest IU from first joint (L2)	C+D+E+g / B+c	40 [131]	40 [131]	PQHY-P120ZLMU	0.42 [1.38]
Height between HU and IU (HU above IU)	H	50 [164]	-	PQHY-P144ZLMU	0.50 [1.64]
Height between HU and IU (HU under IU)	H'	40 [131]	-	PQHY-P168ZLMU	0.50 [1.64]
Height between IU and IU	h1	15 [49]	-	PQHY-P192ZLMU	0.50 [1.64]

HU: Heat source Unit, IU: Indoor Unit

*1 300 [984] for PQHY-P72-120ZLMU, 500 [1640] for PQHY-P144-192ZLMU

Table1. Piping "A" size selection rule (mm [in.])

Heat source unit	Pipe(Liquid)	Pipe(Gas)
PQHY-P72ZLMU	ø9.52 [3/8]	ø19.05 [3/4]
PQHY-P96ZLMU	ø9.52 [3/8] *1	ø22.20 [7/8]
PQHY-P120ZLMU	ø9.52 [3/8] *2	ø22.20 [7/8]
PQHY-P144ZLMU	ø12.70 [1/2]	ø28.58 [1-1/8]
PQHY-P168-192ZLMU	ø15.88 [5/8]	ø28.58 [1-1/8]

*1 L1>=90 m [295 ft.], ø12.70 mm [1/2 in.]

*2 L1>=40 m [131 ft.], ø12.70 mm [1/2 in.]

Table2. Piping "B", "C", "D", "E" size selection rule (mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
~ P54	ø9.52 [3/8]	ø15.88 [5/8]
P55 ~ P72	ø9.52 [3/8]	ø19.05 [3/4]
P73 ~ P108	ø9.52 [3/8]	ø22.20 [7/8]
P109 ~ P144	ø12.70 [1/2]	ø28.58 [1-1/8]
P145 ~ P240	ø15.88 [5/8]	ø28.58 [1-1/8]
P241 ~ P308	ø19.05 [3/4]	ø34.93 [1-3/8]
P309 ~	ø19.05 [3/4]	ø41.28 [1-5/8]

Table3. Piping "a", "b", "c", "d", "e", "f", "g" size selection rule (mm [in.])

Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
P06,P08,P12,P15,P18	ø6.35 [1/4]	ø12.70 [1/2]
P24,P27,P30,P36,P48,P54	ø9.52 [3/8]	ø15.88 [5/8]
P72	ø9.52 [3/8]	ø19.05 [3/4]
P96	ø9.52 [3/8]	ø22.20 [7/8]

Table4-1. Selection criteria for joints

Total down-stream Indoor capacity	Joint
~ P72	CMY-Y102SS-G2
P73 ~ P144	CMY-Y102LS-G2
P145 ~ P240	CMY-Y202S-G2
P241 ~	CMY-Y302S-G2

*Concerning detailed usage of joint parts, refer to its Installation Manual.

Table4-2. See the table below for the first joint of the heat source unit described below.

heat source unit model	Joint model
P96 to P120	CMY-Y102LS-G2
P144 to P192	CMY-Y202S-G2

Table5. Header selection rule

	4-branch Header	8-branch Header	10-branch Header
	CMY-Y104C-G	CMY-Y108C-G	CMY-Y1010C-G
total down-stream Indoor capacity	<=P72	<=P144	<=P240

* CMY-Y104C-G can directly connect PQHY-P72ZLMU, but can NOT directly connect PQHY-P96ZLMU or above;
 * CMY-Y108C-G can directly connect PQHY-P72-144Z(S)LMU, but can NOT directly connect PQHY-P168Z(S)LMU or above;
 * CMY-Y1010C-G can directly connect PQHY-P72-240Z(S)LMU;
 * CMY-Y104C-G can NOT connect P72-P96 Indoor, but CMY-Y108,Y1010C-G can do;
 * Concerning detailed usage of Header parts, refer to its Installation Manual.

Note3. Indoor capacity is described as its model size;
 For example, PEFY-P06NMAU-E3, its capacity is P06;
 Note4. Total down-stream Indoor capacity is the summary of the model size of Indoors downstream.
 For example, PEFY-P06NMAU-E3+PEFY-P08NMAU-E3: Total Indoor capacity=P06+P08=P14
 Note5. Piping sized determined by the Total down-stream indoor capacity is NOT necessary to be bigger than the up-stream one.
 i.e. A>=B; A>C>=D

3-2-2. PQHY-P144-360ZSLMU Piping

Note1. No joint after Header; Piping direct to Indoor Unit from Header;
 Note2. As bents cause pressure loss on transportation of refrigerant, fewer bents design is better;
 Piping length needs to consider the actual length and equivalent length which bents are counted.
 Equivalent piping length (m)=Actual piping length+"M" x Quantity of bent.

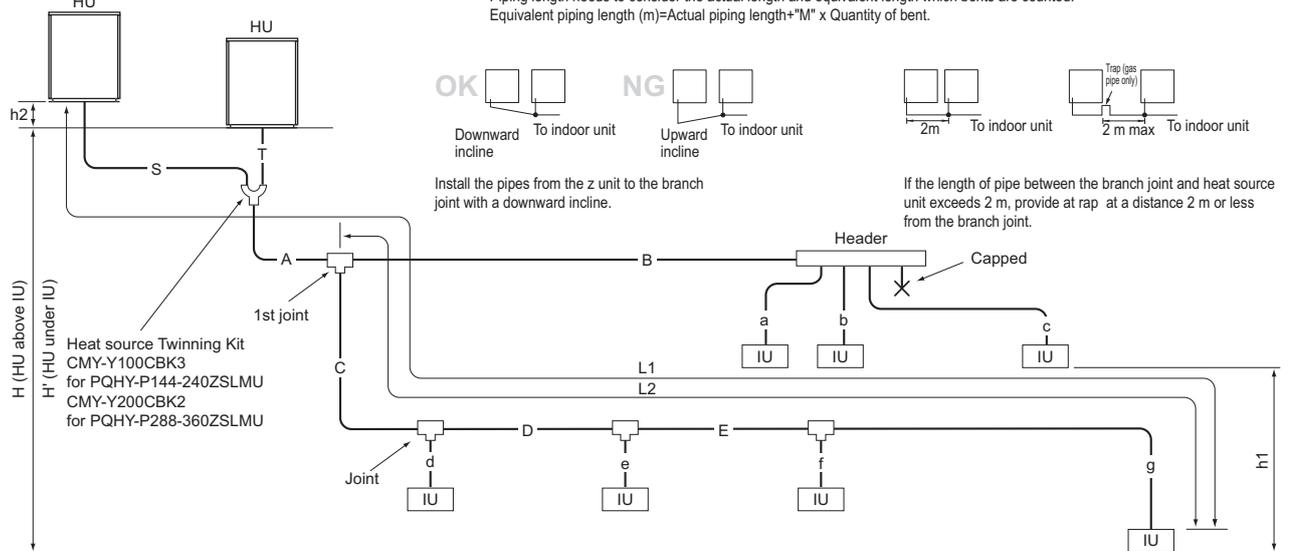


Fig. 3-2-1B Piping scheme

IU: Indoor unit, HU: Heat source unit

Piping length		(m [ft.])		Bends equivalent length "M"	
Item	Piping in the figure	Max. length	Max. equivalent length	Heat source Model	M (m/bends [ft./bends])
Total piping length	S+T+A+B+C+D+E+a+b+c+d+e+f+g	500 [1640]	-	PQHY-P144ZSLMU	0.50 [1.64]
Distance between HU and HU	S+T	10[32]	-	PQHY-P168ZSLMU	0.50 [1.64]
Height between HU and HU	h2	0.1[0.3]	-	PQHY-P192ZSLMU	0.50 [1.64]
Farthest IU from HU (L1)	S(T)+A+C+D+E+g / S(T)+A+B+c	165 [541]	190 [623]	PQHY-P216ZSLMU	0.50 [1.64]
Farthest IU from the first joint (L2)	C+D+E+g / B+c	40 [131]	40 [131]	PQHY-P240ZSLMU	0.50 [1.64]
Height between HU and IU (HU above IU)	H	50 [164]	-	PQHY-P288ZSLMU	0.70 [2.29]
Height between HU and IU (HU under IU)	H'	40 [131]	-	PQHY-P312ZSLMU	0.70 [2.29]
Height between IU and IU	h1	15 [49]	-	PQHY-P336ZSLMU	0.80 [2.62]
				PQHY-P360ZSLMU	0.80 [2.62]

HU: Heat source Unit, IU: Indoor Unit

Table1. Piping "A" size selection rule (mm [in.])

Heat source unit	Pipe(Liquid)	Pipe(Gas)
PQHY-P144ZSLMU	ø12.70 [1/2]	ø28.58 [1-1/8]
PQHY-P168-240ZSLMU	ø15.88 [5/8]	ø28.58 [1-1/8]
PQHY-P288-312ZSLMU	ø19.05 [3/4]	ø34.93 [1-3/8]
PQHY-P336-360ZSLMU	ø19.05 [3/4]	ø41.28 [1-5/8]

For Piping size "S", "T", please refer to specification of the Twinning kit CMY-Y100CBK3, CMY-Y200CBK2 at the Heat source unit's external drawing.

Table4-1. Selection criteria for joints

Total down-stream Indoor capacity	Joint
~ P72	CMY-Y102SS-G2
P73 ~ P144	CMY-Y102LS-G2
P145 ~ P240	CMY-Y202S-G2
P241 ~	CMY-Y302S-G2

*Concerning detailed usage of joint parts, refer to its Installation Manual.
 *The total capacity of the units in the downstream of the branch joint on at least one of the piping lines that are connected to the branch joint should be 240 or below.
 If the total capacity of the units in the downstream of the branch joints on both lines is 240 or above use two branch joints (CMY-Y302S-G2).

Table2. Piping "B", "C", "D", "E" size selection rule (mm [in.])

Total down-stream Indoor capacity	Pipe(Liquid)	Pipe(Gas)
~ P54	ø9.52 [3/8]	ø15.88 [5/8]
P55 ~ P72	ø9.52 [3/8]	ø19.05 [3/4]
P73 ~ P108	ø9.52 [3/8]	ø22.20 [7/8]
P109 ~ P144	ø12.70 [1/2]	ø28.58 [1-1/8]
P145 ~ P240	ø15.88 [5/8]	ø28.58 [1-1/8]
P241 ~ P308	ø19.05 [3/4]	ø34.93 [1-3/8]
P309 ~	ø19.05 [3/4]	ø41.28 [1-5/8]

Table3. Piping "a", "b", "c", "d", "e", "f", "g" size selection rule (mm [in.])

Indoor Unit size	Pipe(Liquid)	Pipe(Gas)
P06, P08, P12, P15, P18	ø6.35 [1/4]	ø12.70 [1/2]
P24, P27, P30, P36, P48, P54	ø9.52 [3/8]	ø15.88 [5/8]
P72	ø9.52 [3/8]	ø19.05 [3/4]
P96	ø9.52 [3/8]	ø22.20 [7/8]

Table4-2. See the table below for the first joint of the heat source unit described below.

heat source unit model	Joint model
P144 to P240	CMY-Y202S-G2
P288 to P360	CMY-Y302S-G2

Table5. Header selection rule

	4-branch Header	8-branch Header	10-branch Header
	CMY-Y104C-G	CMY-Y108C-G	CMY-Y1010C-G
Total down-stream Indoor capacity	<=P72	<=P144	<=P240

* CMY-Y104C-G can directly connect PQHY-P72ZSLMU, but can NOT directly connect PQHY-P96ZSLMU or above;
 * CMY-Y108C-G can directly connect PQHY-P72-144Z(S)LMU, but can NOT directly connect PQHY-P168Z(S)LMU or above;
 * CMY-Y1010C-G can directly connect PQHY-P72-240Z(S)LMU;
 * CMY-Y104C-G can NOT connect P72~P96 Indoor, but CMY-Y108, Y1010C-G can do;
 * Concerning detailed usage of Header parts, refer to its Installation Manual.

Note3. Indoor capacity is described as its model size; For example, PEFY-P06NMAU-E3, its capacity is P06;
 Note4. Total down-stream Indoor capacity is the summary of the model size of Indoors downstream. For example, PEFY-P06NMAU-E3+PEFY-P08NMAU-E3: Total Indoor capacity=P06+P08=P14
 Note5. Piping sized determined by the Total down-stream indoor capacity is NOT necessary to be bigger than the up-stream one. i.e. A>=B, A>=C>=D

3-3. Refrigerant charging calculation

At the time of shipping, the heat source unit is charged with the refrigerant. As this charge does not include the amount needed for extended piping, additional charging for each refrigerant line will be required on site. In order that future servicing may be properly provided, always keep a record of the size and length of each refrigerant line and the amount of additional charge by writing it in the space provided on the heat source unit.

(1) Calculation of additional refrigerant charge

- Calculate the amount of additional charge based on the length of the piping extension and the size of the refrigerant line.
- Use the table to the below as a guide to calculating the amount of additional charging and charge the system accordingly.
 - * When connecting PLFY-P08NBMU-E2, add 0.3kg (10.6 oz) of refrigerant per indoor unit.
- If the calculation results in a fraction of less than 0.1kg[1oz], round up to the next 0.1kg[1oz]. For example, if the result of the calculation was 11.89kg[420.0oz], round the result up to 11.9kg[420oz].

<Additional Charge>

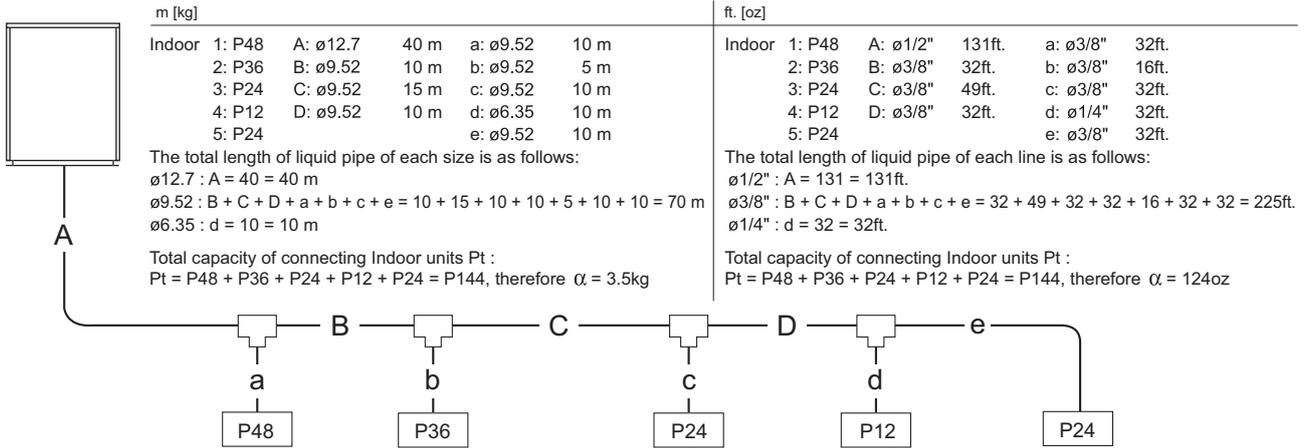
- Piping length from heat source unit to the most farthest indoor unit ≤ 30.5m[100ft] use the table [A]
- Piping length from heat source unit to the most farthest indoor unit > 30.5m[100ft] use the table [B]

Additional refrigerant charge		+	Liquid Piping Size Total length of ø19.05mm [3/4in]		+	Liquid Piping Size Total length of ø15.88mm [5/8in]		+	Liquid Piping Size Total length of ø12.7mm [1/2in]		+	Liquid Piping Size Total length of ø9.52mm [3/8in]		+	Liquid Piping Size Total length of ø6.35mm [1/4in]		+	α
[A]	(kg) [oz]		[A]	(m) × 0.29 (kg/m) (ft) × 3.12 (oz/ft)		[A]	(m) × 0.2 (kg/m) (ft) × 2.16 (oz/ft)		[A]	(m) × 0.12 (kg/m) (ft) × 1.30 (oz/ft)		[A]	(m) × 0.06 (kg/m) (ft) × 0.65 (oz/ft)		[A]	(m) × 0.024 (kg/m) (ft) × 0.26 (oz/ft)		
[B]	(kg) [oz]		[B]	(m) × 0.26 (kg/m) (ft) × 2.80 (oz/ft)		[B]	(m) × 0.18 (kg/m) (ft) × 1.94 (oz/ft)		[B]	(m) × 0.11 (kg/m) (ft) × 1.19 (oz/ft)		[B]	(m) × 0.054 (kg/m) (ft) × 0.59 (oz/ft)		[B]	(m) × 0.021 (kg/m) (ft) × 0.23 (oz/ft)		

Table3-2-4-1. Value of α

Total capacity of connecting indoor units	α	
Models ~ 27	2.0 kg	[71 oz]
Models 28 ~ 54	2.5 kg	[89 oz]
Models 55 ~ 126	3.0 kg	[106 oz]
Models 127 ~ 144	3.5 kg	[124 oz]
Models 145 ~ 180	4.5 kg	[160 oz]
Models 181 ~ 234	5.0 kg	[177 oz]
Models 235 ~ 273	6.0 kg	[212 oz]
Models 274 ~ 307	8.0 kg	[283 oz]
Models 308 ~ 342	9.0 kg	[318 oz]
Models 343 ~ 411	10.0 kg	[353 oz]
Models 412 ~ 480	12.0 kg	[424 oz]
Models 481 ~	14.0 kg	[494 oz]

Example: PQHY-P144ZLMU



Additional refrigerant charge	=	Total length of liquid pipe sized $\phi 19.05$ x 0.26 (kg/m)	+	Total length of liquid pipe sized $\phi 15.88$ x 0.18 (kg/m)	+	Total length of liquid pipe sized $\phi 12.7$ x 0.11 (kg/m)	+	Total length of liquid pipe sized $\phi 9.52$ x 0.054 (kg/m)	+	Total length of liquid pipe sized $\phi 6.35$ x 0.021 (kg/m)	+ 3.5
(kg)		0 (m) x 0.26 (kg/m)		0 (m) x 0.18 (kg/m)		40 (m) x 0.11 (kg/m)		70 (m) x 0.054 (kg/m)		10 (m) x 0.021 (kg/m)	
	=	0	+	0	+	40 x 0.11	+	70 x 0.054	+	10 x 0.021	+ 3.5
		= 11.9 kg									
or											
Additional refrigerant charge	=	Total length of liquid pipe sized $\phi 3/4"$ x 2.80 (oz/ft.)	+	Total length of liquid pipe sized $\phi 5/8"$ x 1.94 (oz/ft.)	+	Total length of liquid pipe sized $\phi 1/2"$ x 1.19 (oz/ft.)	+	Total length of liquid pipe sized $\phi 3/8"$ x 0.59 (oz/ft.)	+	Total length of liquid pipe sized $\phi 1/4"$ x 0.23 (oz/ft.)	+ 124
(oz)		0 (ft.) x 2.80 (oz/ft.)		0 (ft.) x 1.94 (oz/ft.)		131 (ft.) x 1.19 (oz/ft.)		225 (ft.) x 0.59 (oz/ft.)		32 (ft.) x 0.23 (oz/ft.)	
	=	0	+	0	+	131 x 1.19	+	225 x 0.59	+	32 x 0.23	+ 124
		= 420 [oz]									

■ Limitation of the amount of refrigerant to be charged

The above calculation result of the amount of refrigerant to be charged must become below the value in the table below.

Total index of the heat source units		P72 ZLMU	P96 ZLMU	P120 ZLMU	P144 ZLMU	P168 ZLMU	P192 ZLMU	P144 ZSLMU	P168 ZSLMU
Maximum refrigerant charge	Factory charged	5.0kg	5.0kg	5.0kg	6.0kg	6.0kg	6.0kg	10.0kg	10.0kg
	Charged on site	22.0kg	28.5kg	29.5kg	42.0kg	51.5kg	53.5kg	42.0kg	51.5kg
	Total for system	27.0kg	33.5kg	34.5kg	48.0kg	57.5kg	59.5kg	52.0kg	61.5kg
	Factory charged	11 lbs 1 oz	11 lbs 1 oz	11 lbs 1 oz	13 lbs 4 oz	13 lbs 4 oz	13 lbs 4 oz	22 lbs 1 oz	22 lbs 1 oz
	Charged on site	48 lbs 9 oz	62 lbs 14 oz	65 lbs 1 oz	92 lbs 10 oz	113 lbs 9 oz	118 lbs 0 oz	92 lbs 10 oz	113 lbs 9 oz
	Total for system	59 lbs 9 oz	73 lbs 14 oz	76 lbs 1 oz	105 lbs 14 oz	126 lbs 13 oz	131 lbs 3 oz	114 lbs 11 oz	135 lbs 10 oz

Total index of the heat source units		P192 ZSLMU	P216 ZSLMU	P240 ZSLMU	P288 ZSLMU	P312 ZSLMU	P336 ZSLMU	P360 ZSLMU
Maximum refrigerant charge	Factory charged	10.0kg	10.0kg	10.0kg	12.0kg	12.0kg	12.0kg	12.0kg
	Charged on site	53.5kg	55.0kg	56.0kg	67.5kg	67.5kg	67.5kg	70.0kg
	Total for system	63.5kg	65.0kg	66.0kg	79.5kg	79.5kg	79.5kg	82.0kg
	Factory charged	22 lbs 1 oz	22 lbs 1 oz	22 lbs 1 oz	26 lbs 8 oz	26 lbs 8 oz	26 lbs 8 oz	26 lbs 8 oz
	Charged on site	118 lbs 0 oz	121 lbs 5 oz	123 lbs 8 oz	148 lbs 13 oz	148 lbs 13 oz	148 lbs 13 oz	154 lbs 6 oz
	Total for system	140 lbs 0 oz	143 lbs 5 oz	145 lbs 9 oz	175 lbs 5 oz	175 lbs 5 oz	175 lbs 5 oz	180 lbs 13 oz

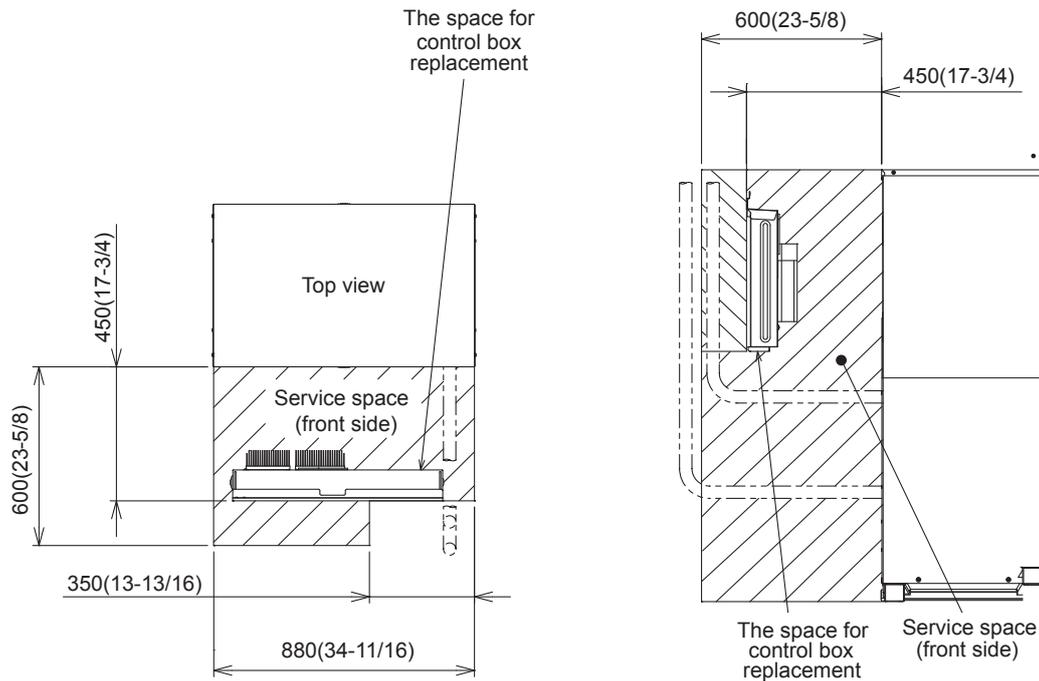
4-1. General requirements for installation

1. If possible, locate the unit to reduce the direct thermal radiation to the unit.
2. Consider the amount of noise the unit produces when choosing an installation location.
Valves and refrigerant flow on the outdoor/heat source unit may generate noise.
3. Avoid sites that may encounter strong winds.
4. Ensure the installation site can bear the weight of the unit.
5. Condensation should be moved away from the unit, particularly in heating mode.
6. Provide enough space for installation and service as shown in section .
7. Avoid sites where acidic solutions or chemical sprays (such as sulfur sprays) are used frequently.
8. The unit should be provided from combustible gas, oil, steam, chemical gas like acidic solution, sulfur gas and so on.

4-2. Spacing

In case of single installation, 600mm or more of back space as front space makes easier access when servicing the unit from rear side.

Unit: mm (in.)



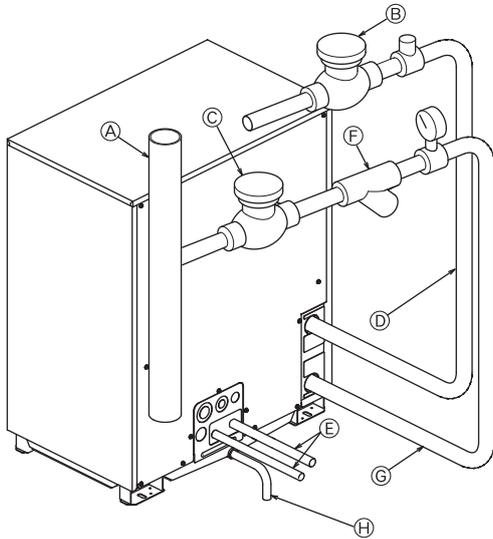
4-3. Caution on selecting heat source unit

Consult your dealer when the following issues on WY series are the key concern.

- Warm air may flow out from the indoor unit during heating Thermo-OFF.
- Refrigerant flow sound may occur in the rooms with low background noise such as hotel rooms, hospital rooms, bedrooms, or conference rooms.

To avoid the above issues on WY series, changing board settings on the indoor and outdoor units is required. Ask AC&R Works for details.

4-4. Piping direction



- Ⓐ Main circulating water pipe
- Ⓑ Shutoff valve
- Ⓒ Shutoff valve
- Ⓓ Water outlet (upper)
- Ⓔ Refrigerant pipes
- Ⓕ Y-type strainer
- Ⓖ Water inlet (lower)
- Ⓗ Drain pipe

1. Insulation installation

With City Multi WY/ WR2 Series piping, as long as the temperature range of the circulating water is kept to average temperatures year-round (29.4°C[85°F] in the summer, 21.1°C[70°F] in the winter), there is no need to insulate or otherwise protect indoor piping from exposure. You should use insulation in the following situations:

- Any heat source piping.
- Indoor piping in cold-weather regions where frozen pipes are a problem.
- When air coming from the outside causes condensation to form on piping.
- Any drainage piping.

2. Water processing and water quality control

To preserve water quality, use the closed type of cooling tower for WY/ WR2. When the circulating water quality is poor, the water heat exchanger can develop scales, leading to a reduction in heat-exchange power and possible corrosion of the heat exchanger. Please pay careful attention to water processing and water quality control when installing the water circulation system.

- Removal of foreign objects or impurities within the pipes. During installation, be careful that foreign objects, such as welding fragments, sealant particles, or rust, do not enter the pipes.
- Water Quality Processing
 - ① Depending on the quality of the cold-temperature water used in the air conditioner, the copper piping of the heat exchanger may become corroded. We recommend regular water quality processing. Cold water circulation systems using open heat storage tanks are particularly prone to corrosion. When using an open-type heat storage tank, install a water-to-water heat exchanger, and use a closed-loop circuit on the air conditioner side. If a water supply tank is installed, keep contact with air to a minimum, and keep the level of dissolved oxygen in the water no higher than 1mg/ℓ.

② Water quality standard

Items	Lower mid-range temperature water system		Tendency	
	Recirculating water [20<T<60°C] [68<T<140°F]	Make-up water	Corrosive	Scale-forming
pH (25°C)[77°F]	7.0 ~ 8.0	7.0 ~ 8.0	○	○
Electric conductivity (mS/m) (25°C)[77°F]	30 or less	30 or less	○	○
(μS/cm) (25°C)[77°F]	[300 or less]	[300 or less]		
Chloride ion (mg Cl/ℓ)	50 or less	50 or less	○	
Sulfate ion (mg SO ₄ ²⁻ /ℓ)	50 or less	50 or less	○	
Acid consumption (pH4.8) (mg CaCO ₃ /ℓ)	50 or less	50 or less		○
Total hardness (mg CaCO ₃ /ℓ)	70 or less	70 or less		○
Calcium hardness (mg CaCO ₃ /ℓ)	50 or less	50 or less		○
Ionic silica (mg SiO ₂ /ℓ)	30 or less	30 or less		○
Iron (mg Fe/ℓ)	1.0 or less	0.3 or less	○	○
Copper (mg Cu/ℓ)	1.0 or less	0.1 or less	○	
Sulfide ion (mg S ²⁻ /ℓ)	not to be detected	not to be detected	○	
Ammonium ion (mg NH ₄ ⁺ /ℓ)	0.3 or less	0.1 or less	○	
Residual chlorine (mg Cl/ℓ)	0.25 or less	0.3 or less	○	
Free carbon dioxide (mg CO ₂ /ℓ)	0.4 or less	4.0 or less	○	
Ryzner stability index	-	-	○	○

Reference : Guideline of Water Quality for Refrigeration and Air Conditioning Equipment. (JRA GL02E-1994)

- ③ Please consult with a water quality control specialist about water quality control methods and water quality calculations before using anti-corrosive solutions for water quality management.
- ④ When replacing a previously installed air conditioning device (even when only the heat exchanger is being replaced), first conduct a water quality analysis and check for possible corrosion. Corrosion can occur in cold-water systems even if there has been no prior signs of corrosion. If the water quality level has dropped, please adjust water quality sufficiently before replacing the unit.